
esa
Earth from Space
5 Years of Envisat
an Overview
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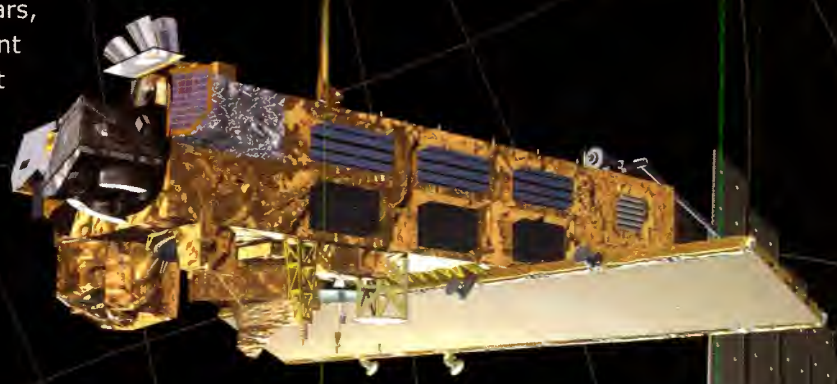
Agence spatiale européenne
the Living Planet

5 Years of ENVISAT - an Overview

Since its launch in 2002, Envisat has provided continuous observation and monitoring of the Earth's land, atmosphere, oceans and ice caps. This brochure presents, in a non-exhaustive way, some of the images and derived results provided by Envisat data over the last 5 years.

Envisat - short for ENVIronmental SATellite - is the largest Earth Observation spacecraft ever built. Its ten sophisticated optical and radar instruments collectively provide insights into factors contributing to climate change such as ice sheets melting, sea level rise, or trace gases distribution.
The huge amount of data products generated every day by the Envisat mission are used not only for immediate use, but also for building an archive for the next generation to use. Faster, more accurate data has resulted in more than 1200 scientific projects currently using Envisat.
Furthermore, the data returned by its suite of instruments are also facilitating the development of a number of operational applications such as monitoring the sea ice, oil slicks and illegal fisheries, among others.

As an undertaking of ESA member states plus Canada, Envisat constitutes a major contribution to the international effort of space agencies worldwide to provide the data and information required to further the understanding, modeling, and prediction of environmental and climatic changes. Envisat was initially intended to stay in orbit for five years, however, given the overall excellent standing of the satellite, the Envisat mission is expected to carry on with its measurements until 2010.



See more information on The Envisat Mission:
www.esa.int/eo
www.envisat.esa.int
www.earth.esa.int

Or contact the EO Helpdesk: eohelp@esa.int

Earth from Space

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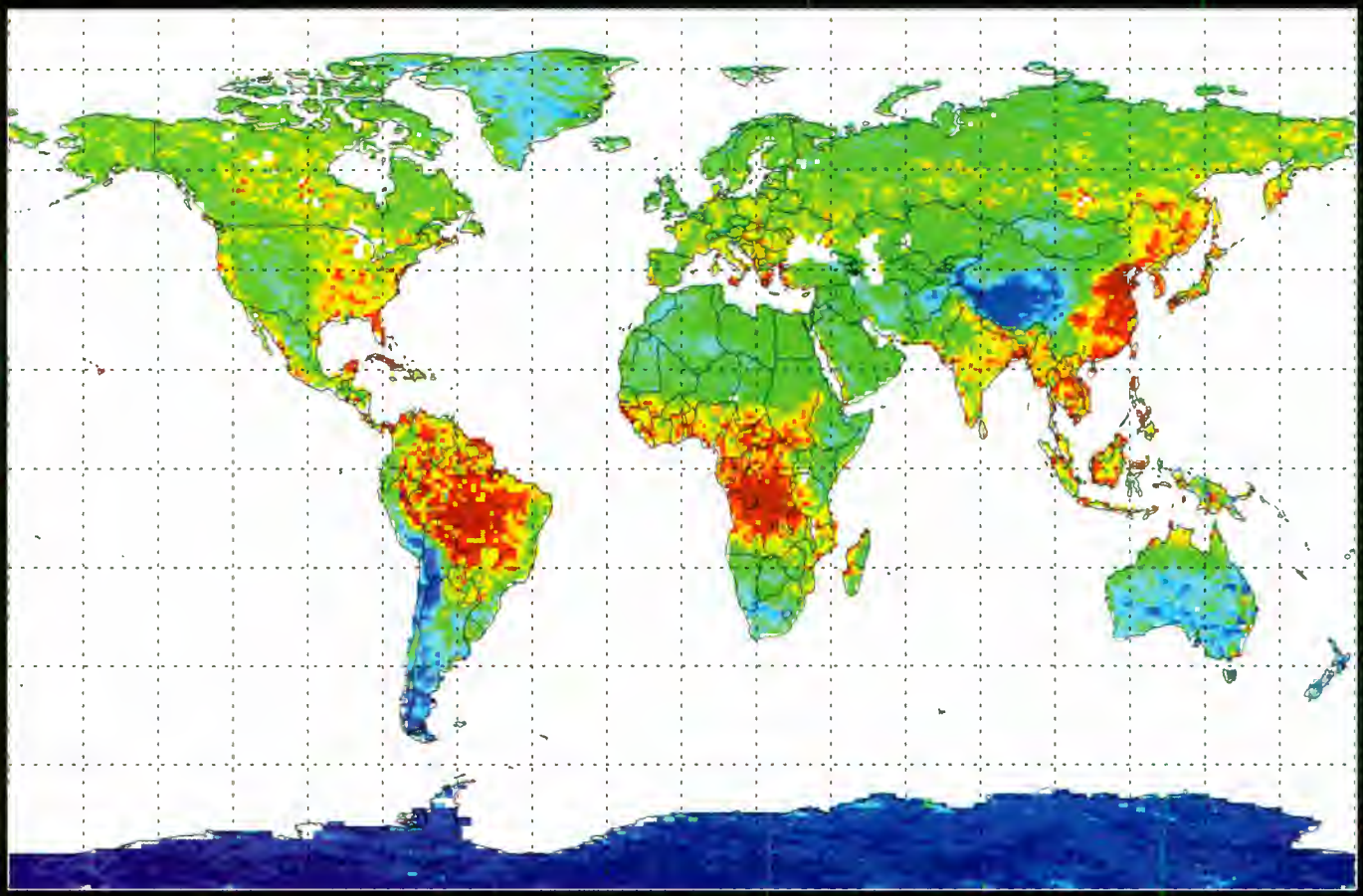
ATMOSPHERE

Plume of Smoke from Oil Depot Fire, London

ENVISAT meris - 11 December 2005

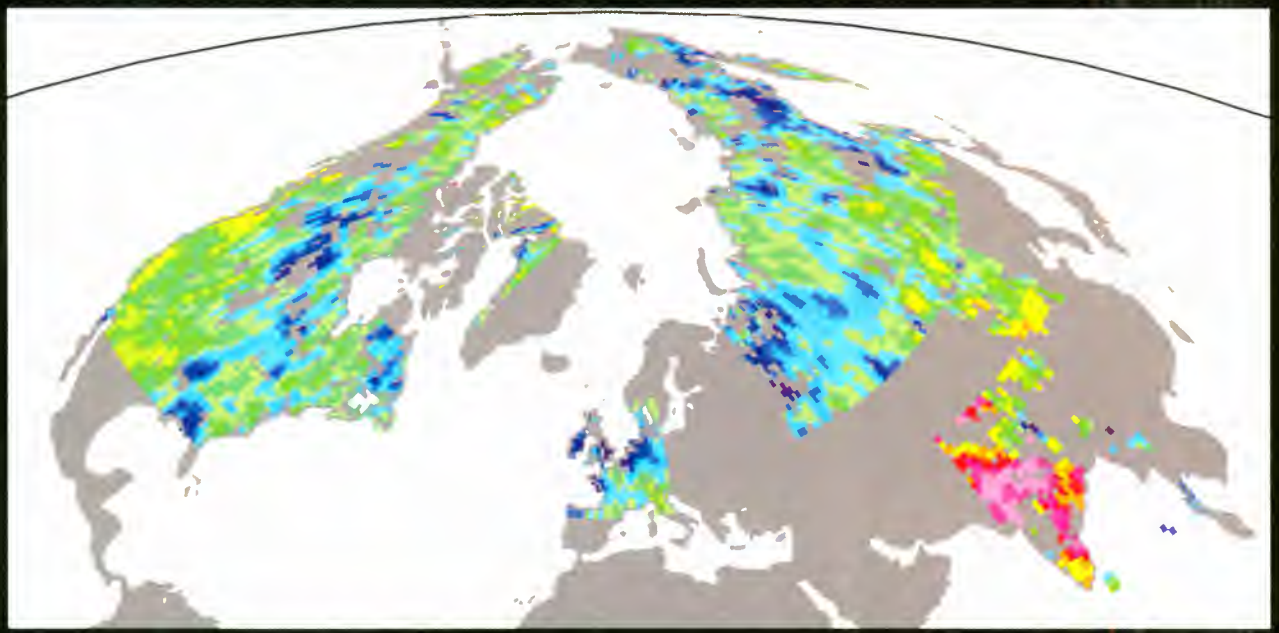
Carbon Monoxide (CO) Measurements



Credits: University of Bremen

ENVISAT sciamachy - 2003

Carbon Dioxide (CO_2) Volume Mixing Ratio

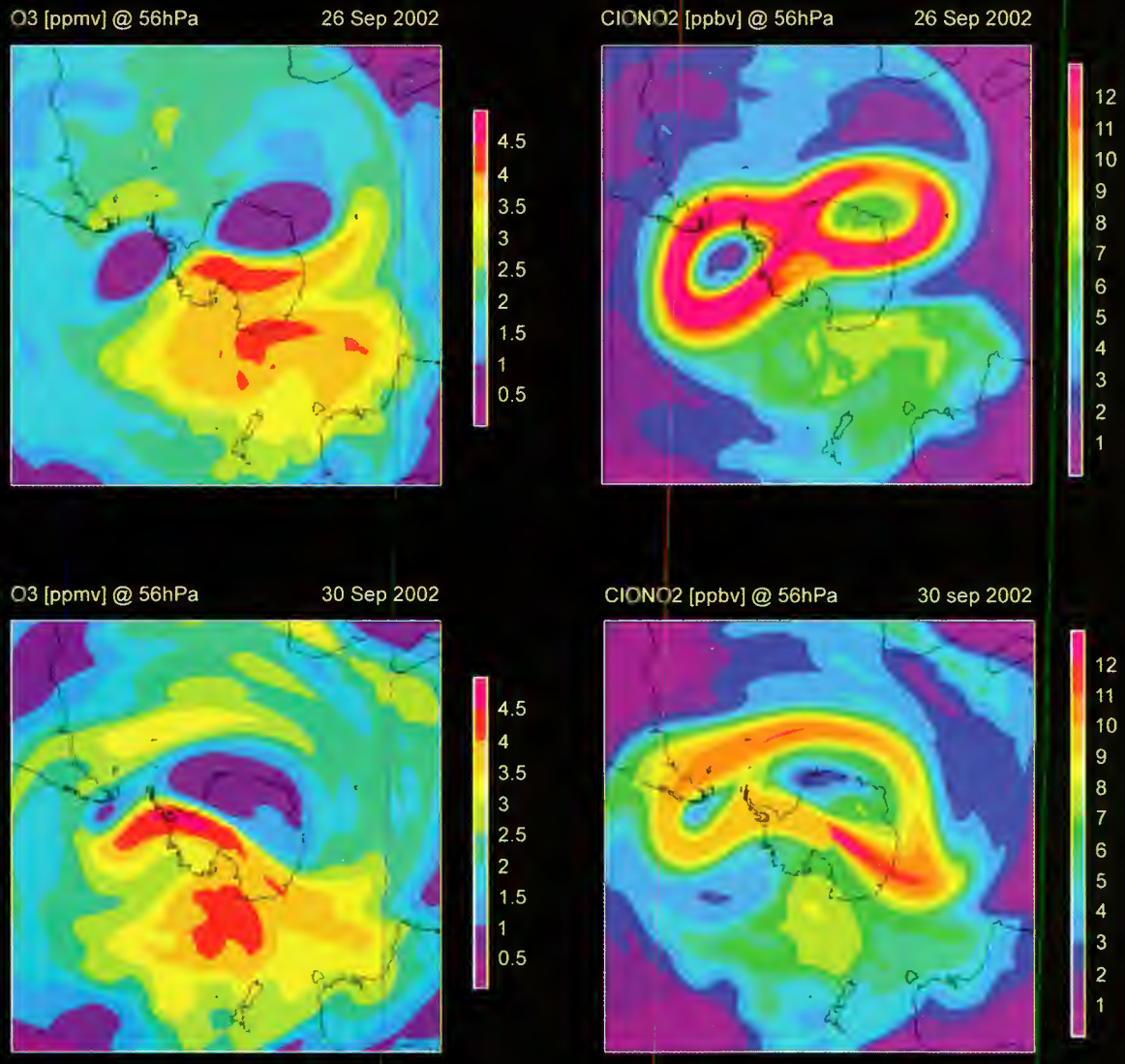


Co2 Volume Mixing Ratio [ppmv]

<350.00 355.00 360.00 365.00 370.00 375.00 380.00 385.00 >390.00

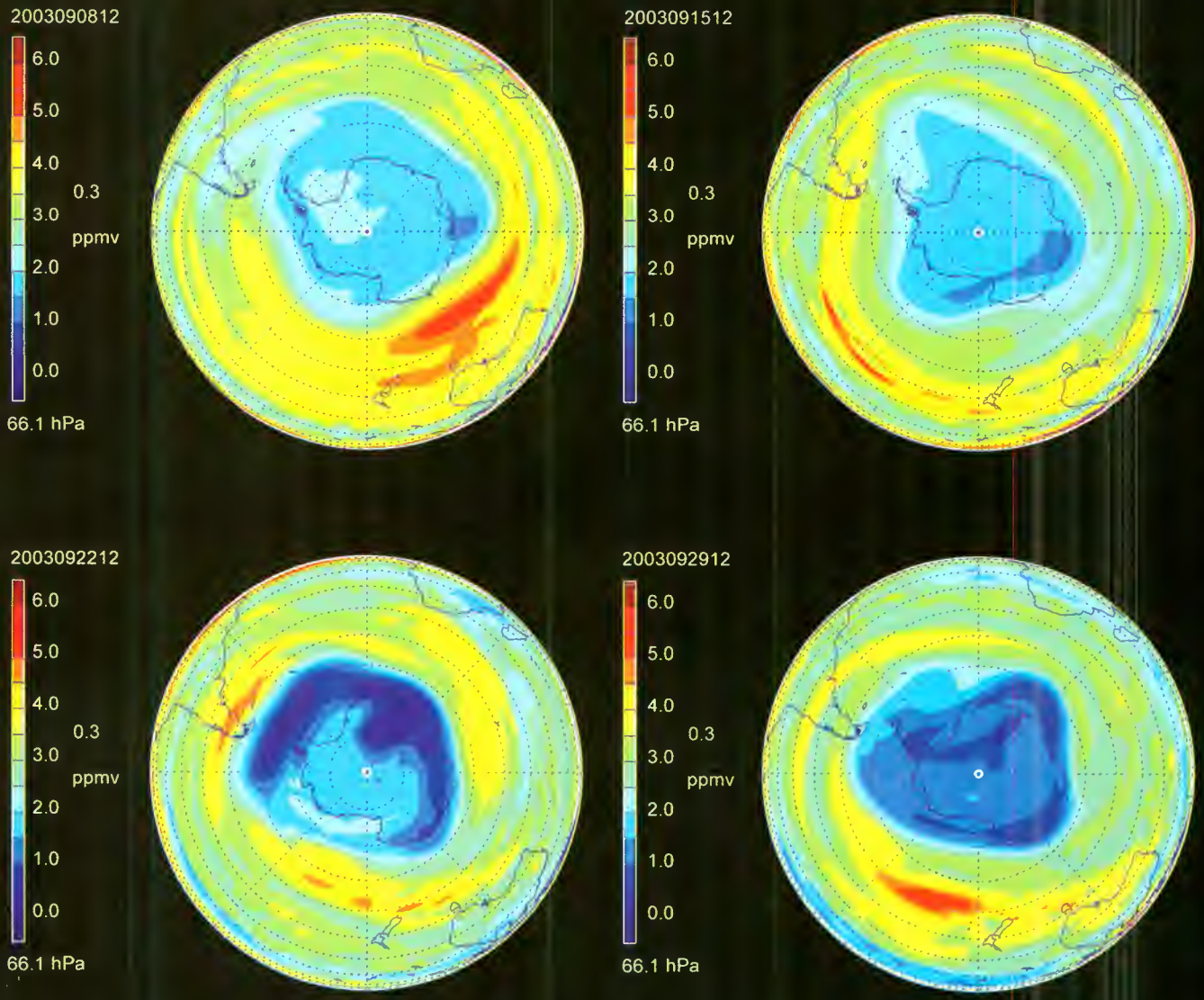
Credits: University of Leicester

The Ozone Hole: Ozone & Chlorine Nitrate Measurements



ENVISAT mipas - 26 & 30 September 2002

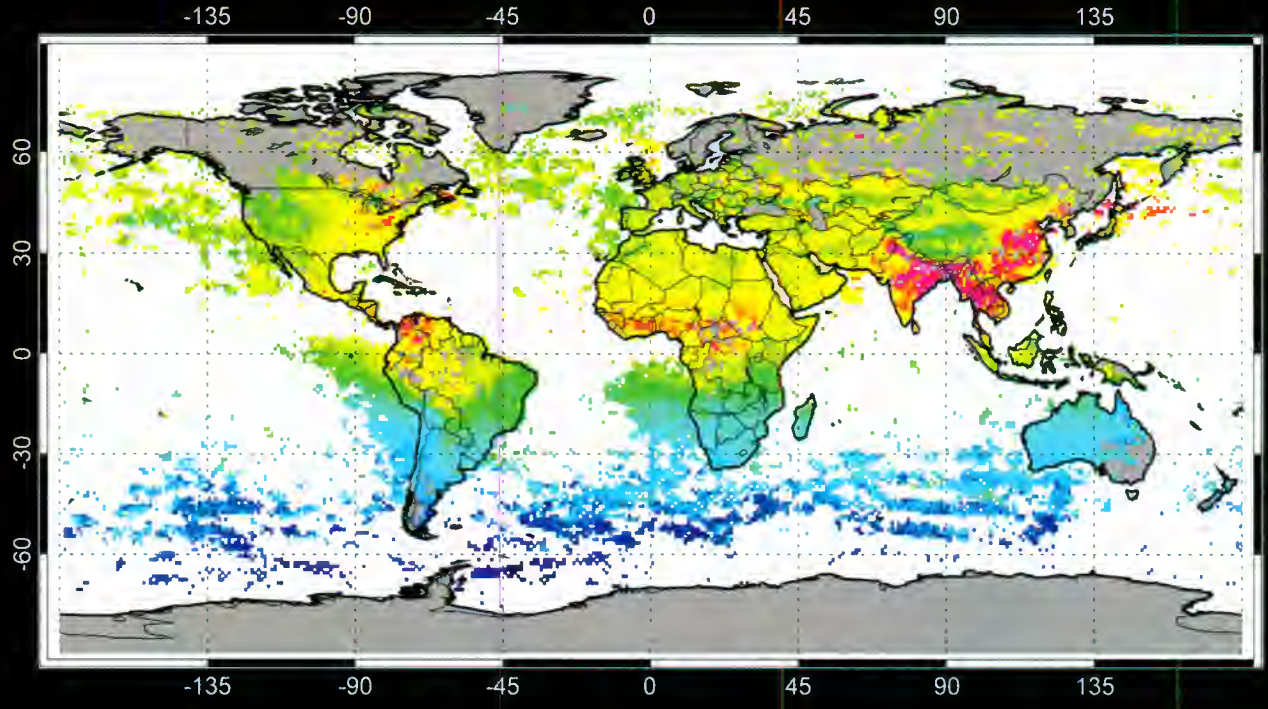
Credits: Promote



Credits: ACRI, IPSL, CNES

ENVISAT gomos - 8, 15, 22 & 29 September 2003

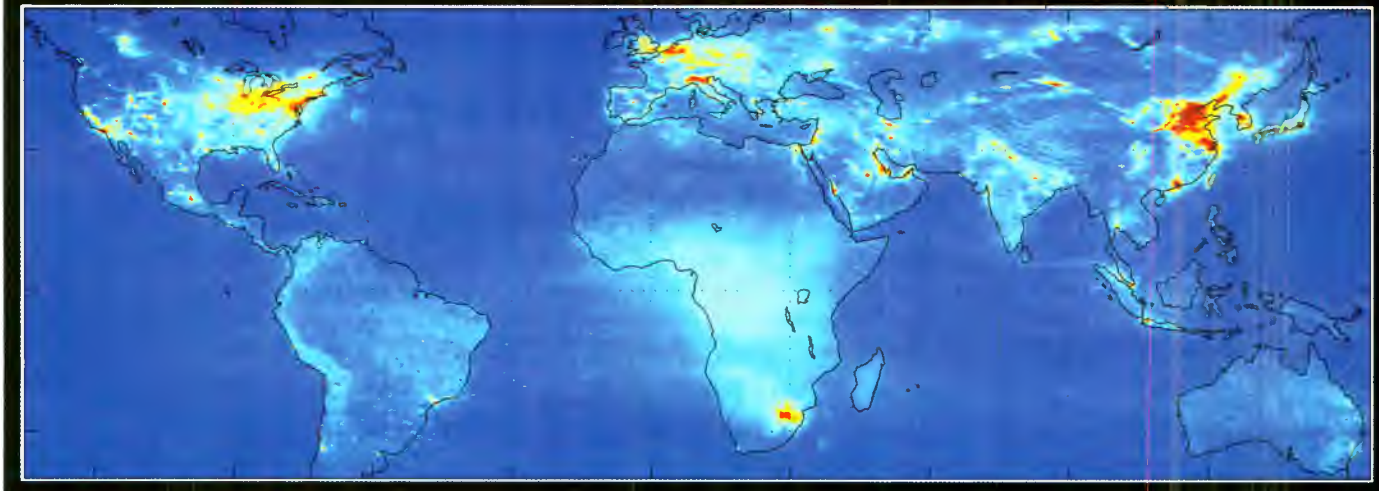
Methane (Column-averaged Volume Mixing Ratio)



Credits: University of Heidelberg/KNMI

ENVISAT sciamachy - August until November 2003

Nitrogen Dioxide Pollution Map



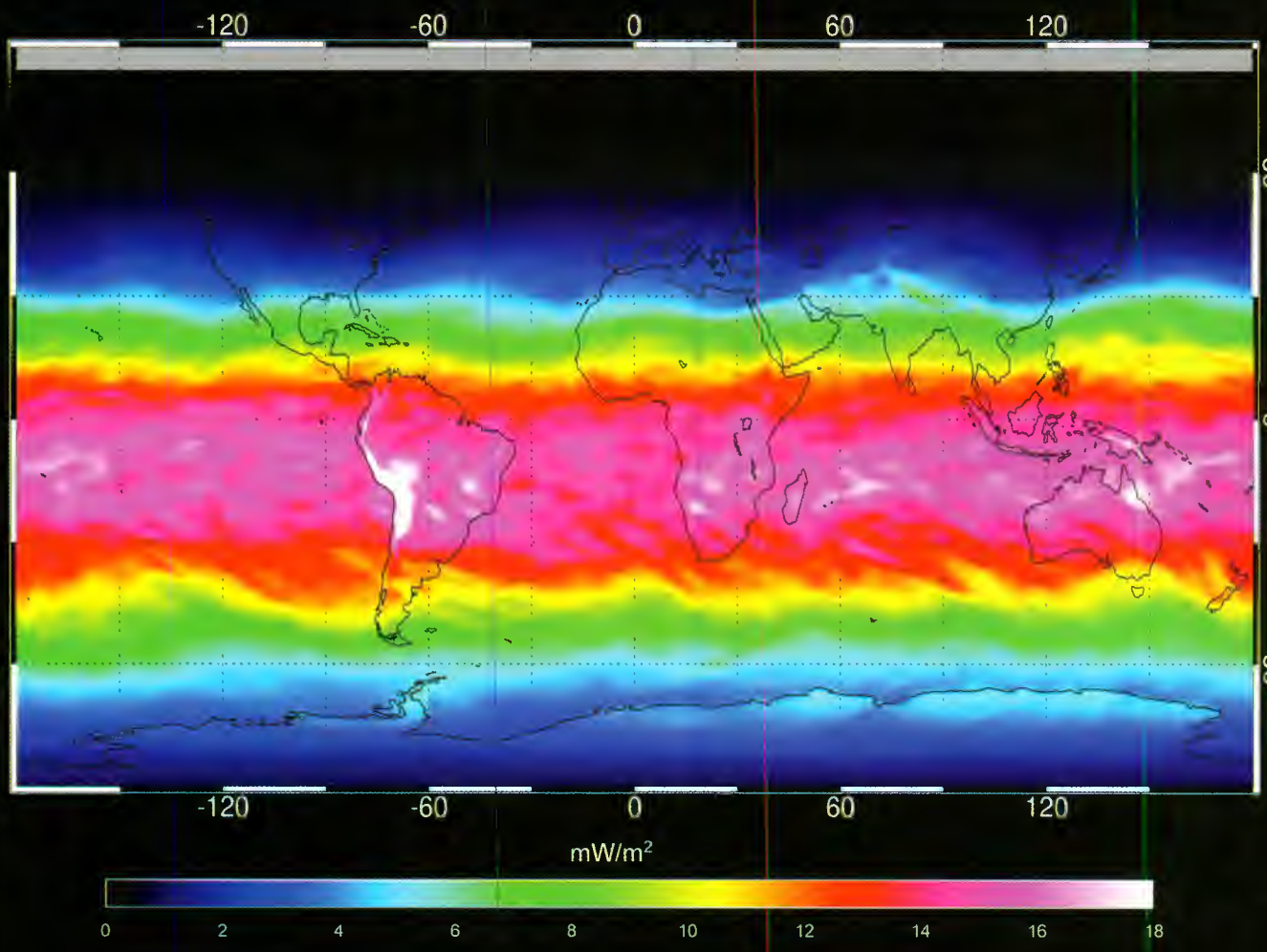
10^{15} molec/cm^2

-1 0 1 2 3 4 5 6

Credits: University of Heidelberg

ENVISAT sciamachy - June 2003-January 2004

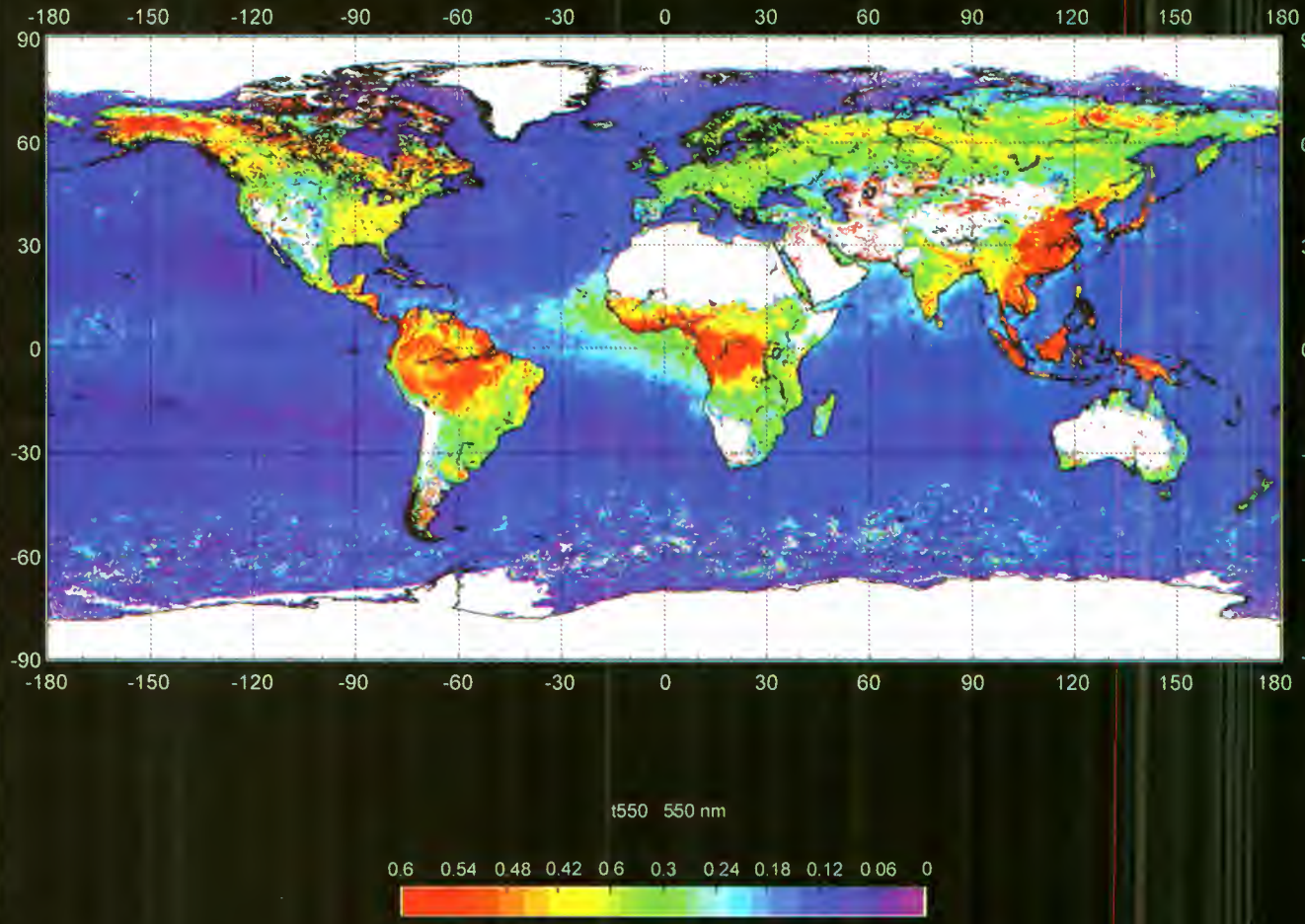
Erythemal UV Index (clear sky)



Credits: KNMI - ESA

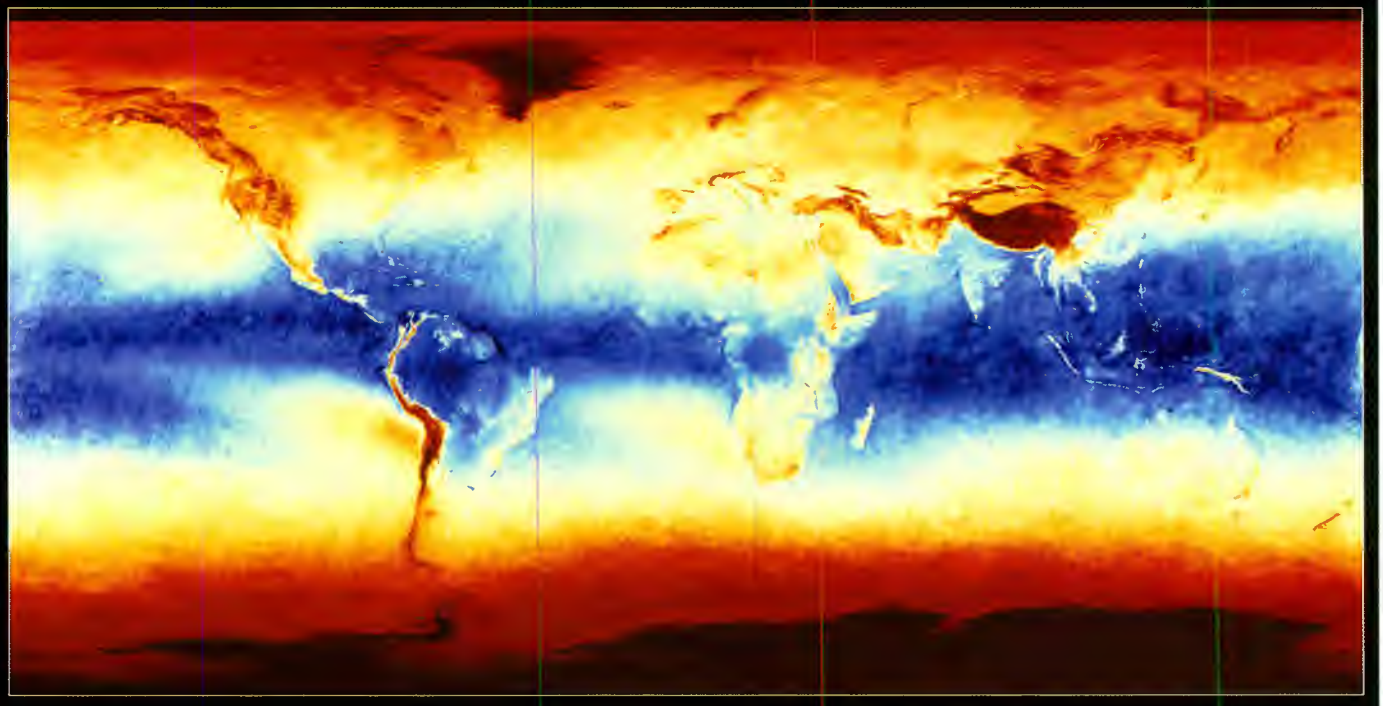
ENVISAT sciamachy - 31 January 2007

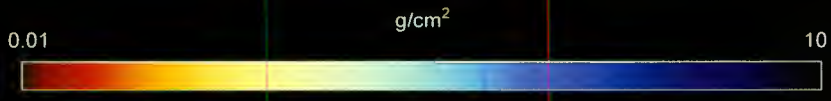
Aerosols optical thickness over land and water



Credits: ACRI - ESA

Maximum Water Vapour Mean





ENVISAT meris - 2003

Contrails over the United States

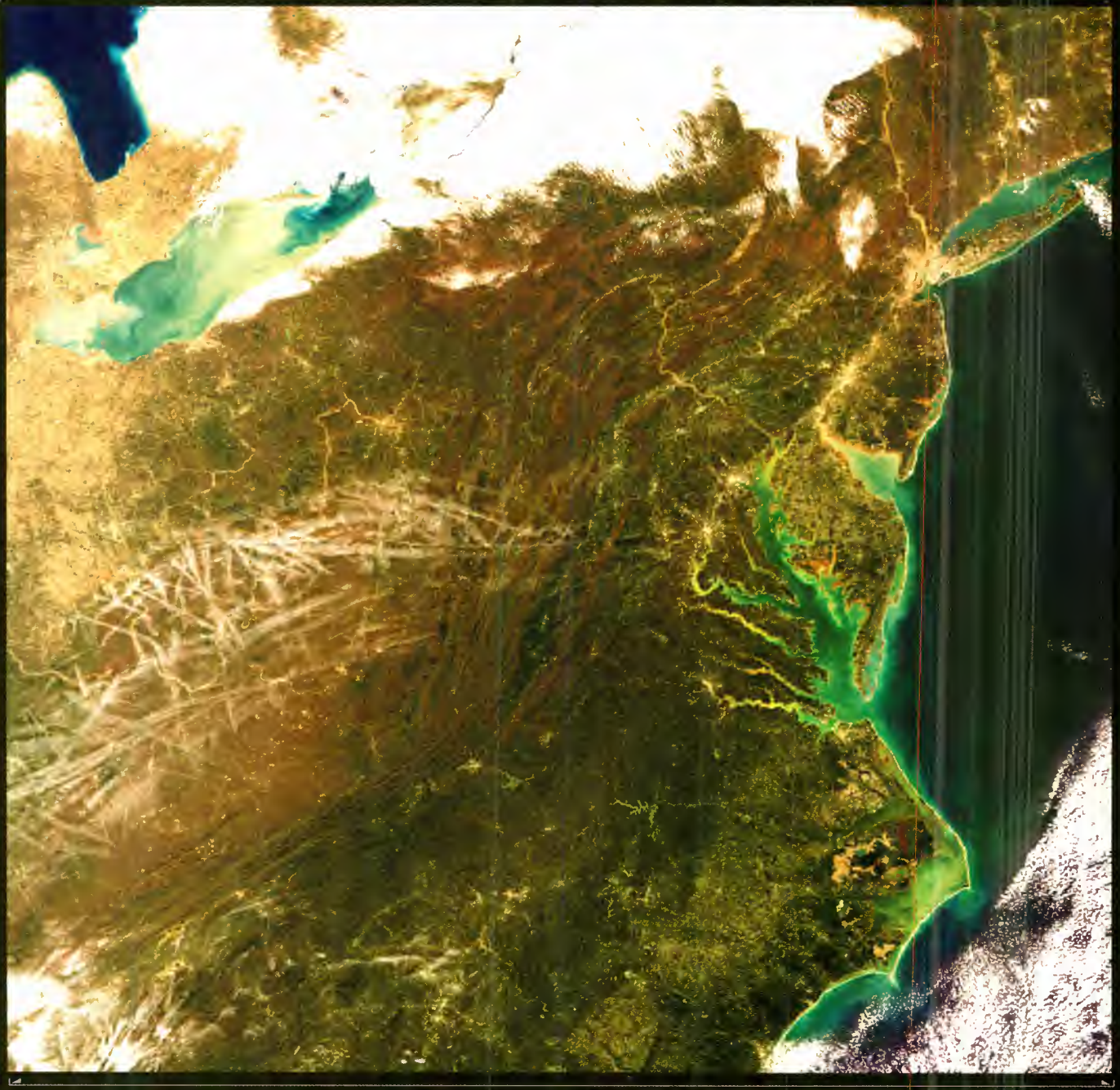
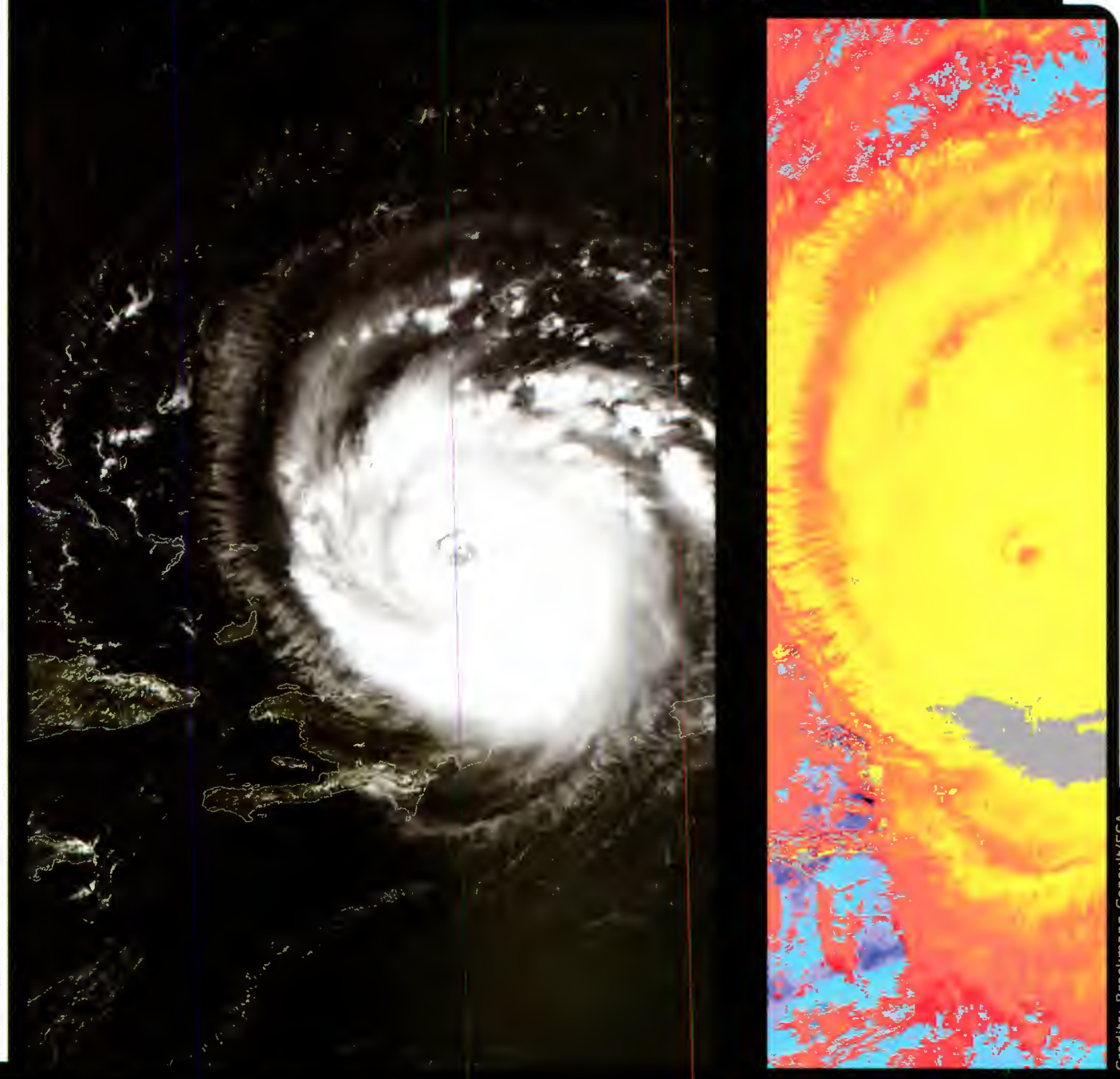


image width: 1135 Km

ENVISAT meris - 19 November 2005

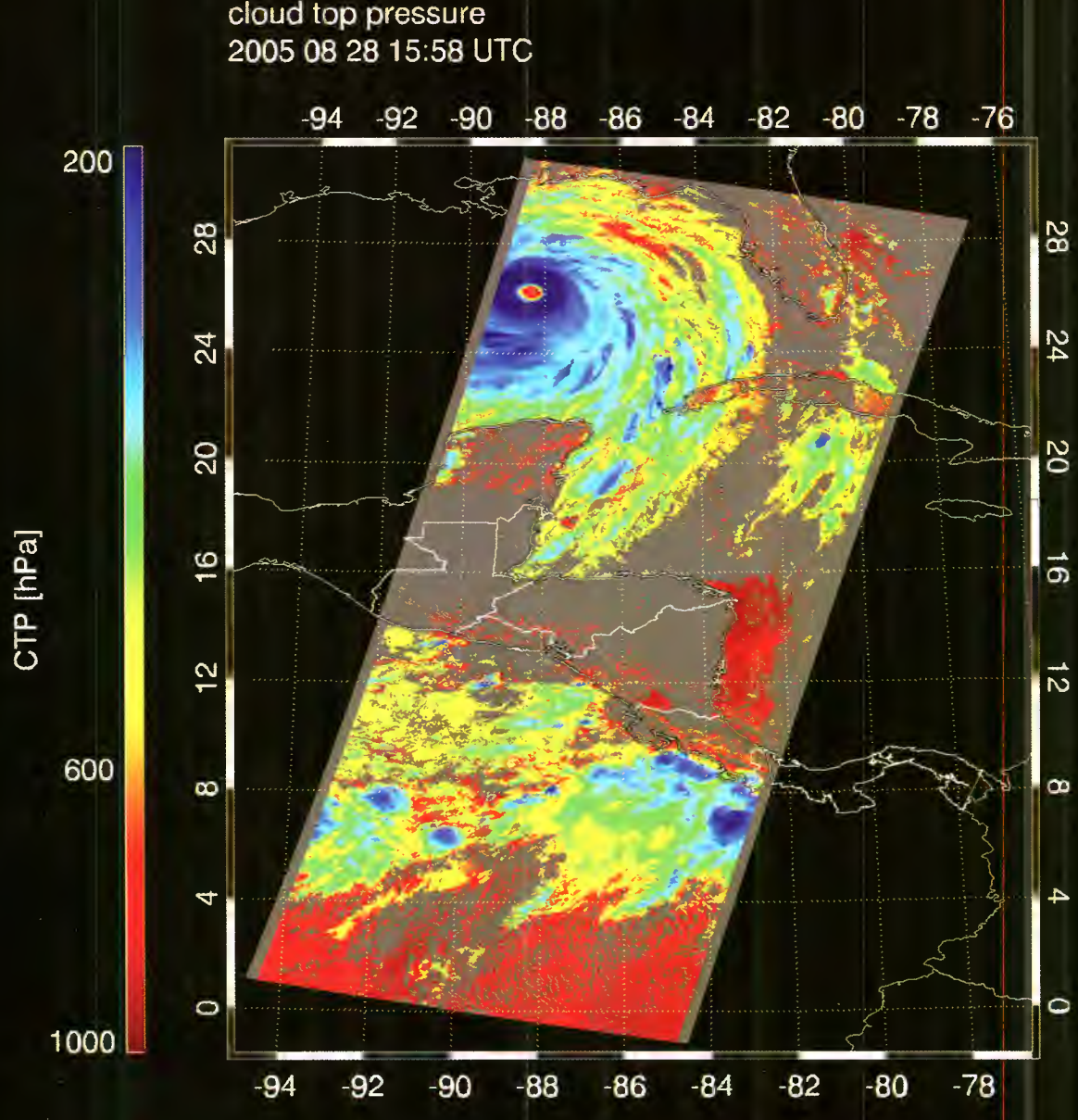
Hurricane Frances (Sea Surface & Cloud-top Temperatures)



ENVISAT meris & aatsr - 1 September 2004

Credits: Brockmann Consult/ESA

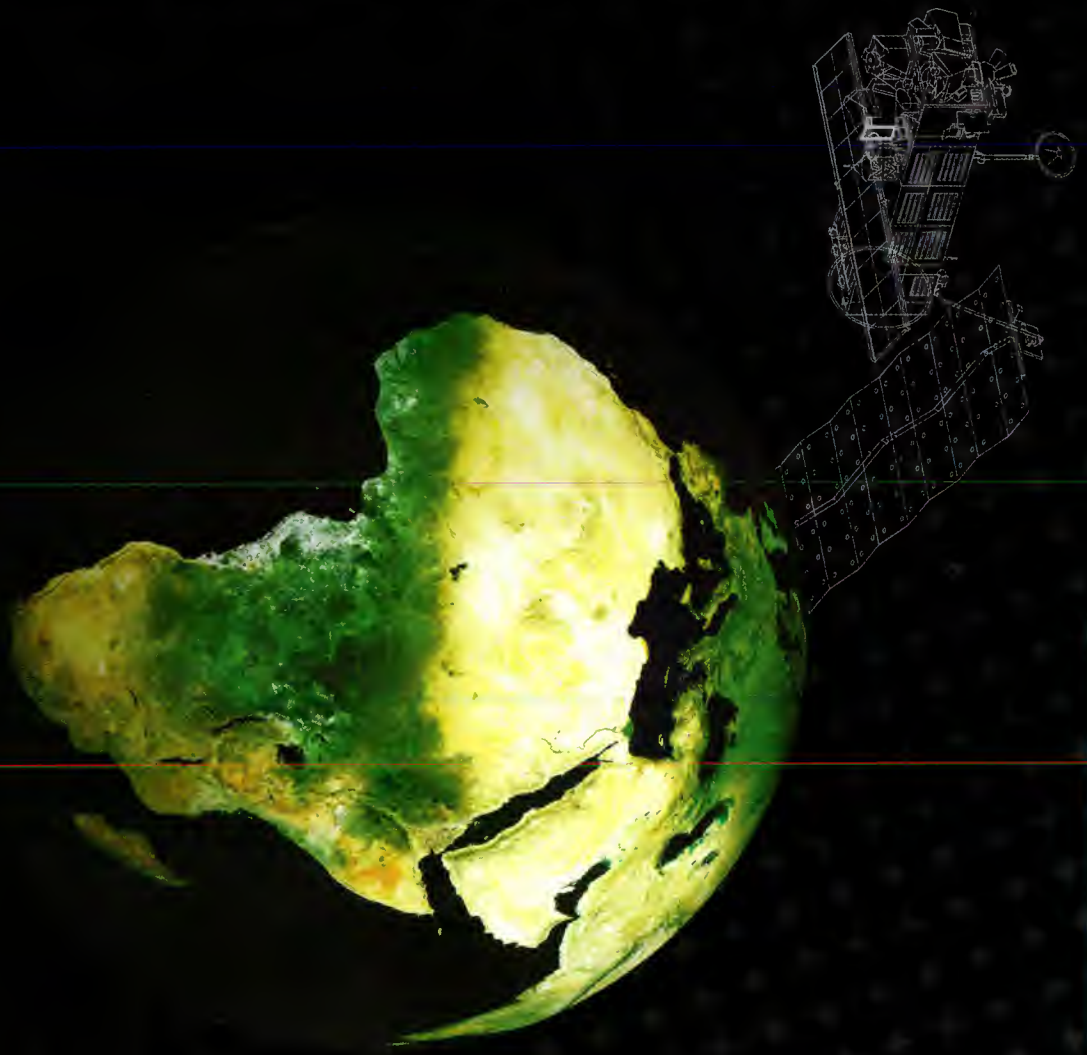
Hurricane Katrina Cloud-top Pressure



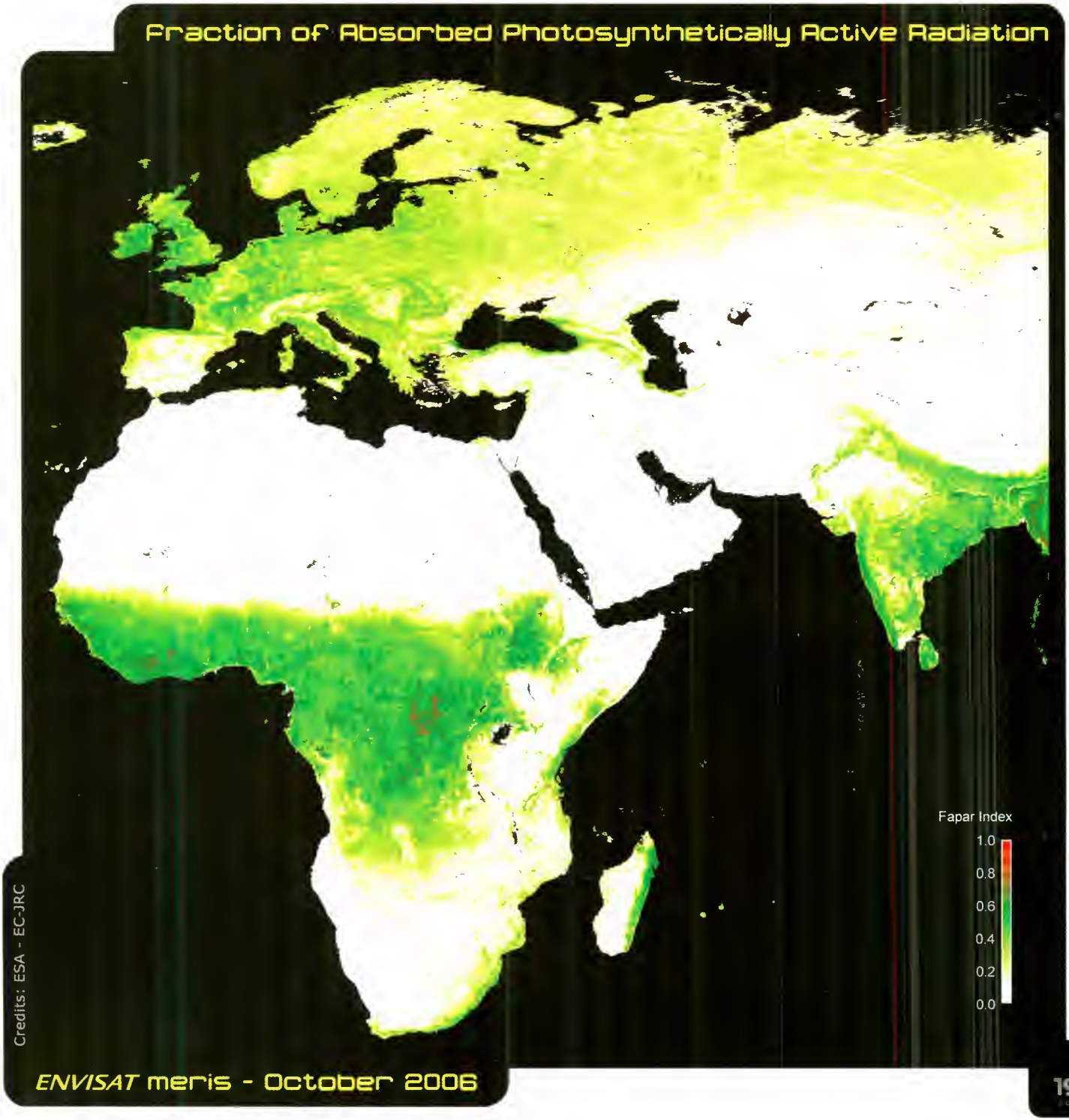
Credits: Freie Universität Berlin

ENVISAT meris - 28 August 2005

5 years of ENVISAT - an Overview



LAND


Fraction of Absorbed Photosynthetically Active Radiation
Fapar Index
1.0
0.8
0.6
0.4
0.2
0.0
Credits: ESA - EC-JRC
ENVISAT meris - October 2006

Thawing of the Peat Bogs in Siberia

ENVISAT meris - 7 August 2006

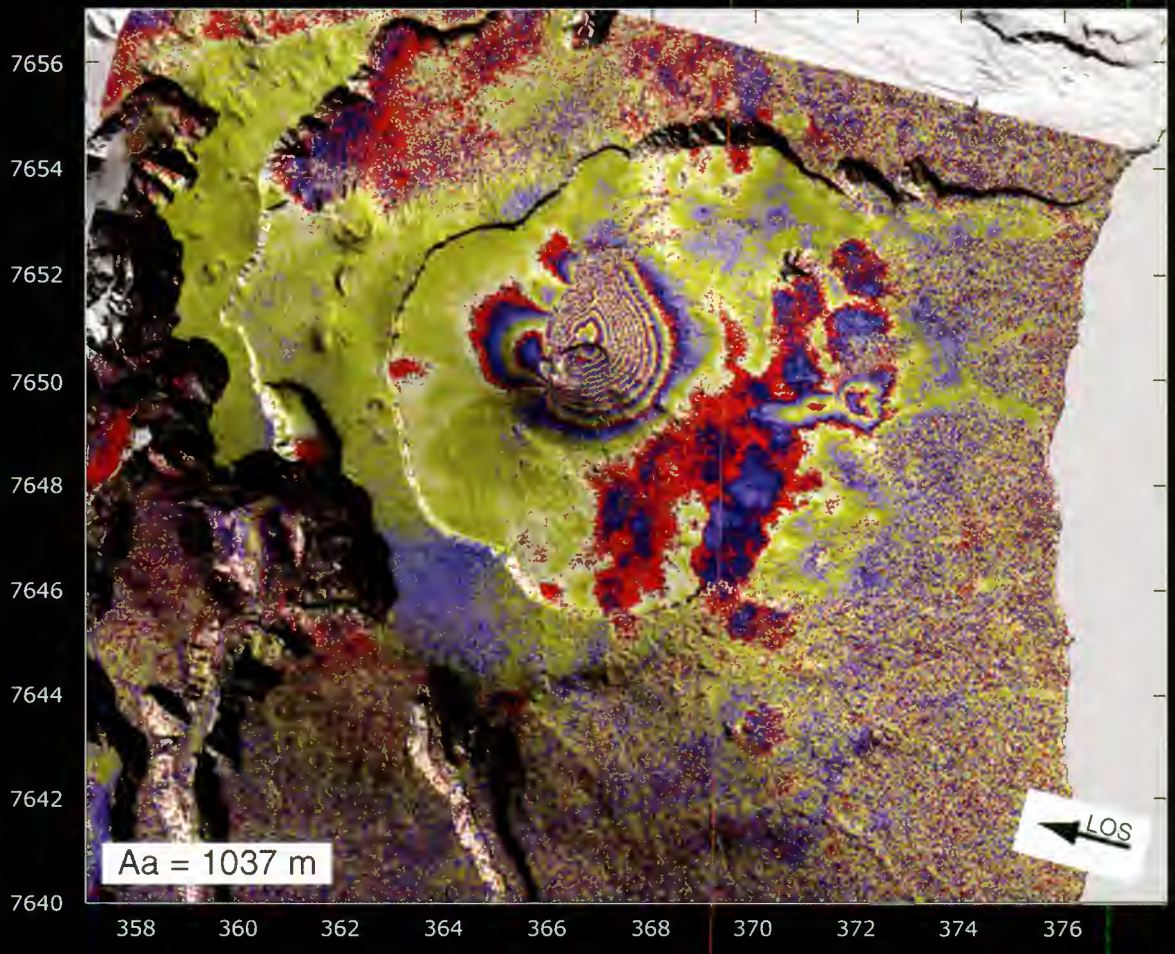
image width: 463 Km

UK Heat Maps Made on Clear Sky Days

ENVISAT aatsr - 15 & 18 July 2006

Credits: University of Leicester - ESA

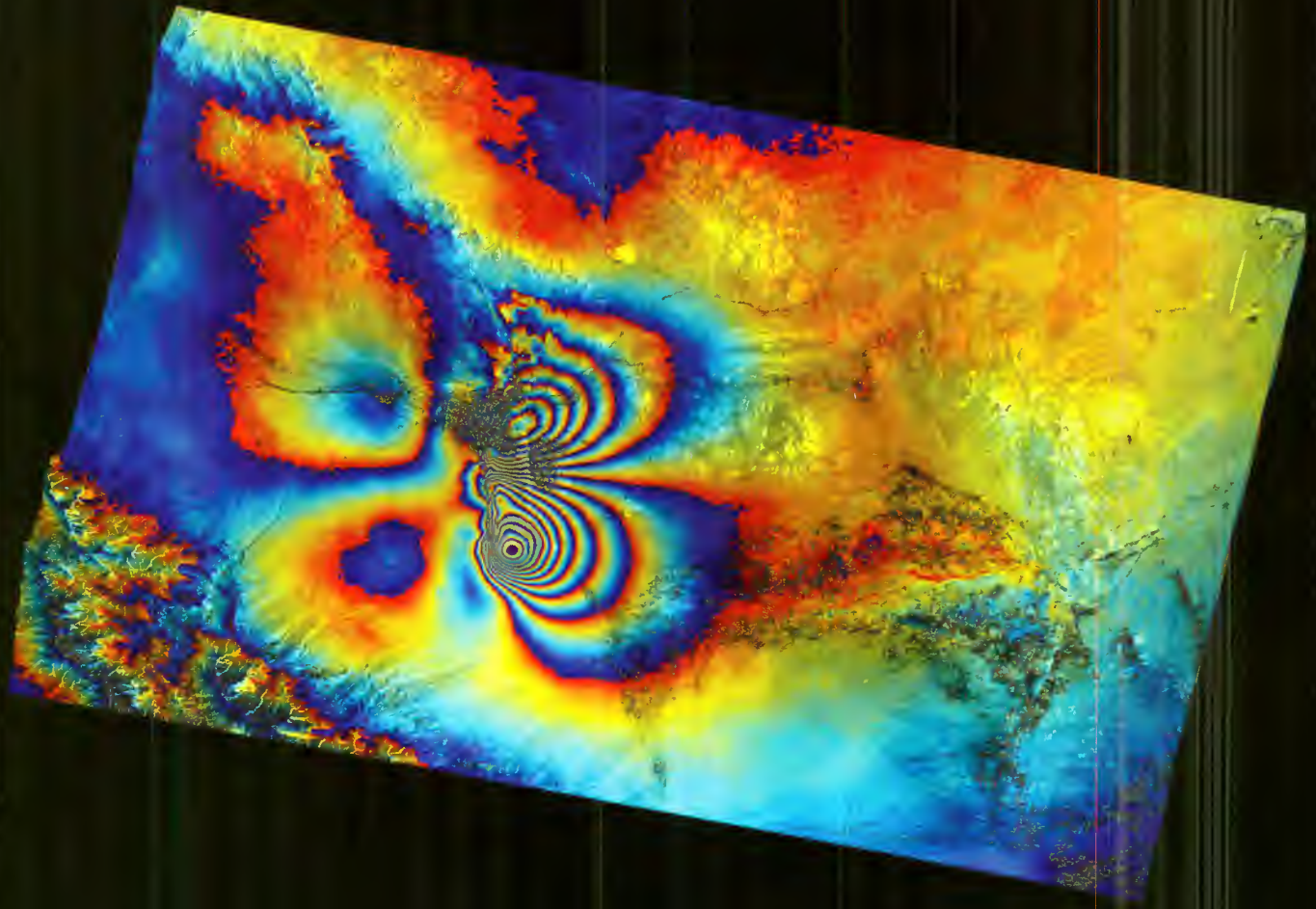
Interferograms, Piton de la Fournaise Volcano, Réunion



ENVISAT asar - 27 July-31 August 2003

Credits: IPGP, OPGC

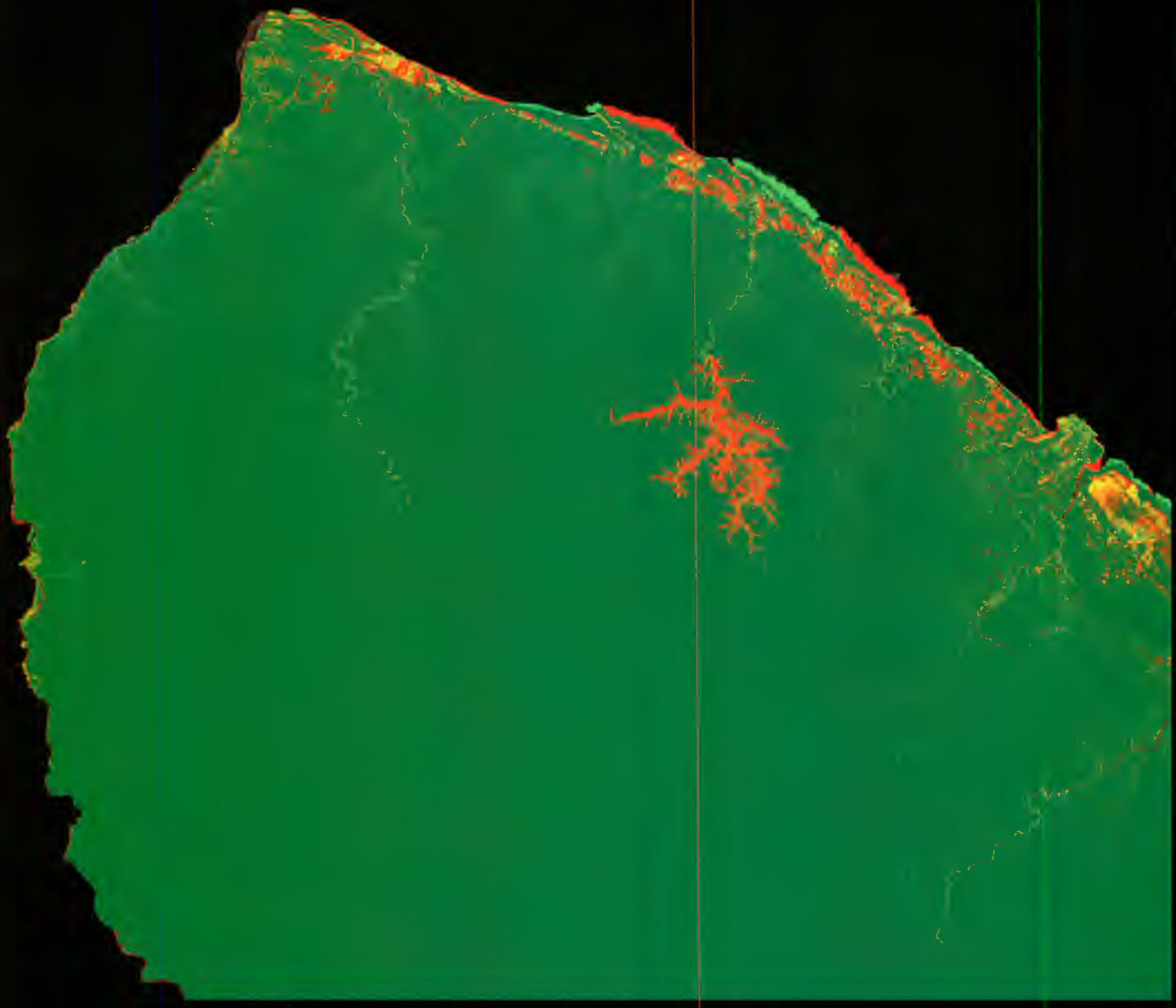
Interferogram of the Bam Earthquake, Iran



Credits: Politecnico di Milano

ENVISAT asar - 3 December 2003 & 11 February 2004

Forest Change Map from French Guiana



ENVISAT asar + *ERS* sar - from 1992 until 2004

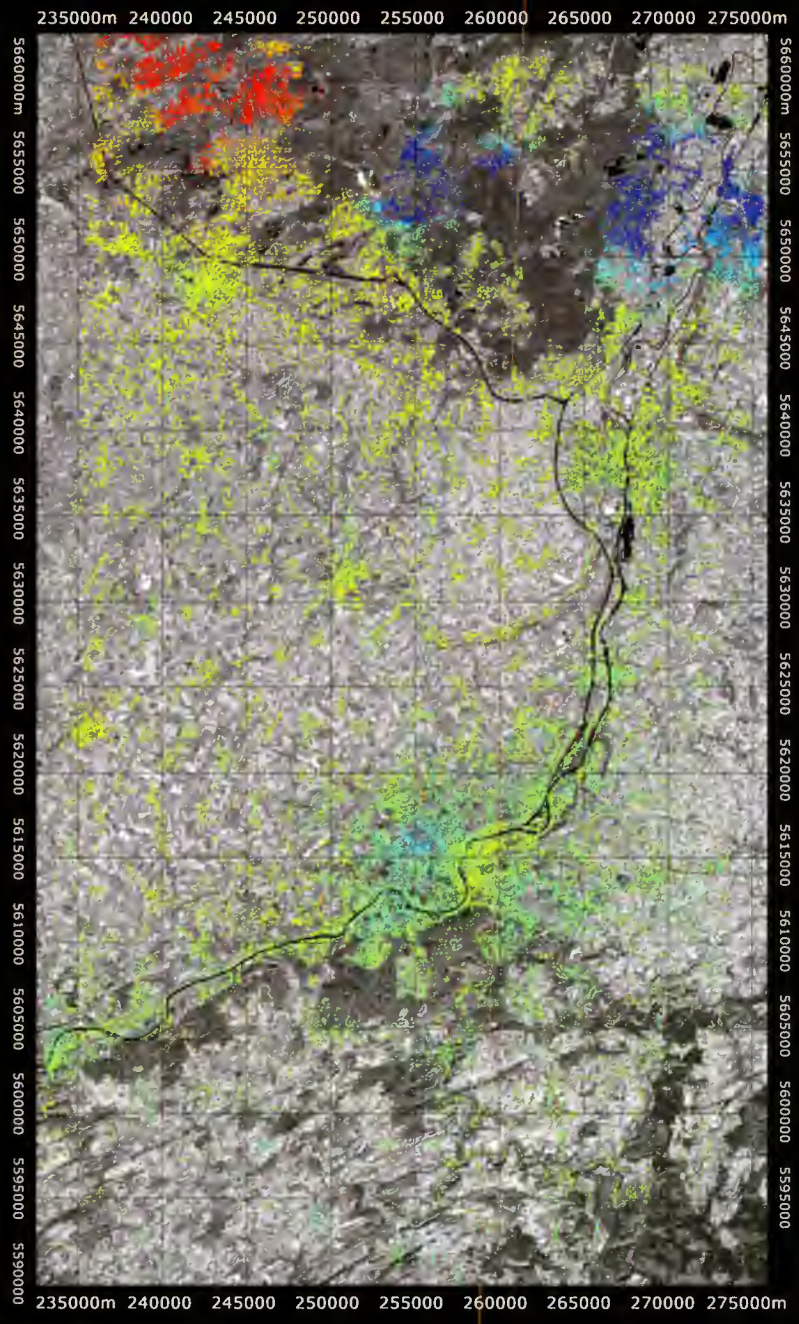
Credits: VTT

Deforestation in the Amazon Basin

image width: 462 Km

ENVISAT meris - 30 May 2006

Subsidence Map of Liege



Credits: NPA Group, 2006-2007 Background image: Landsat ETM+ B8

ENVISAT asar + ERS - 1992-2006

Elbe River Flooding

ENVISAT asar (HH, HV, diff HH-HV) - 19 August 2002

Edmonton, Canada

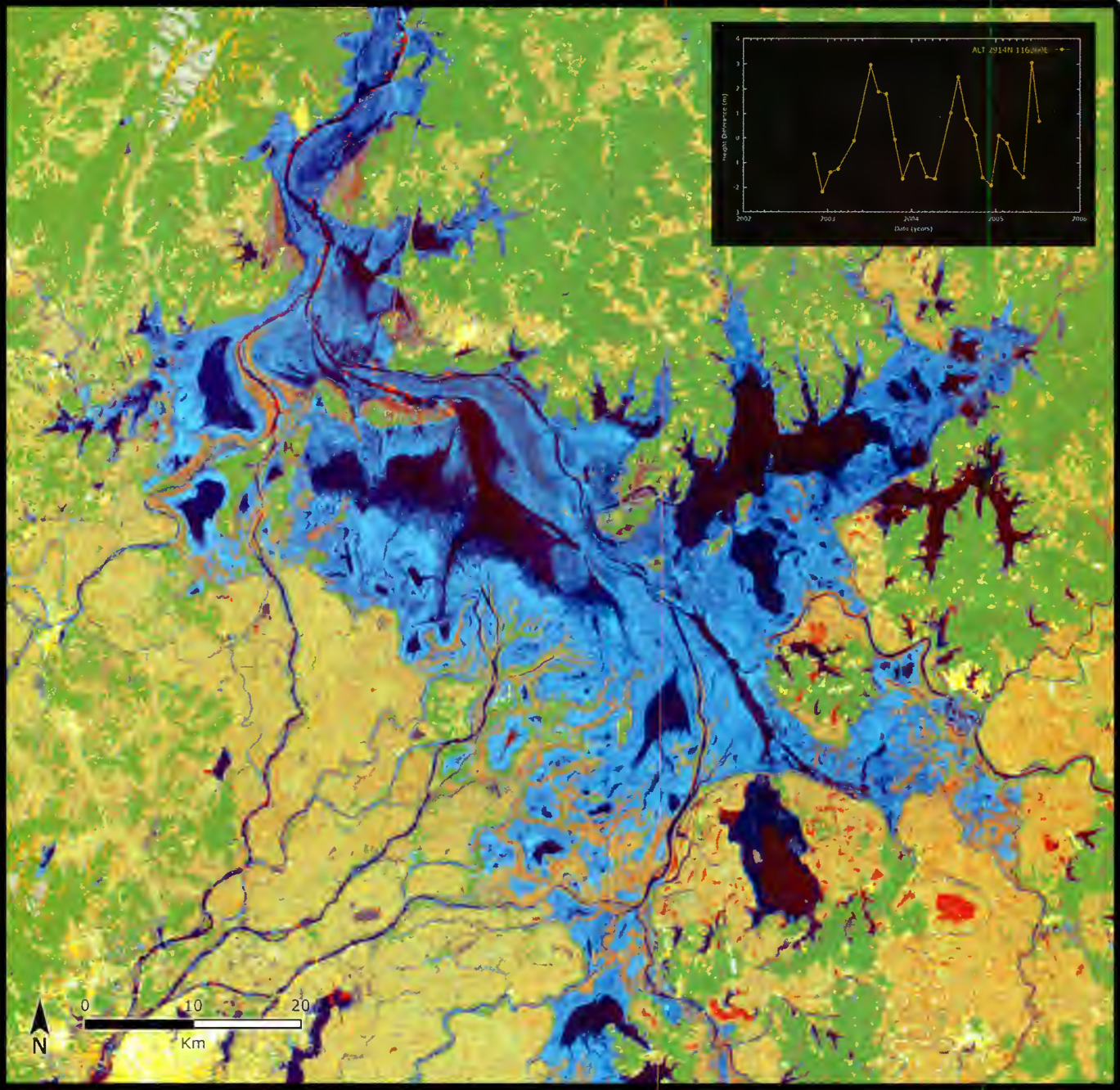
image width: 56 Km

ENVISAT asar (HH, VV, PC HH-VV) - 17 February 2003

image width: 101 Km

ENVISAT asar - R: 01/01/04, G: 13/03/04, B: 26/06/04

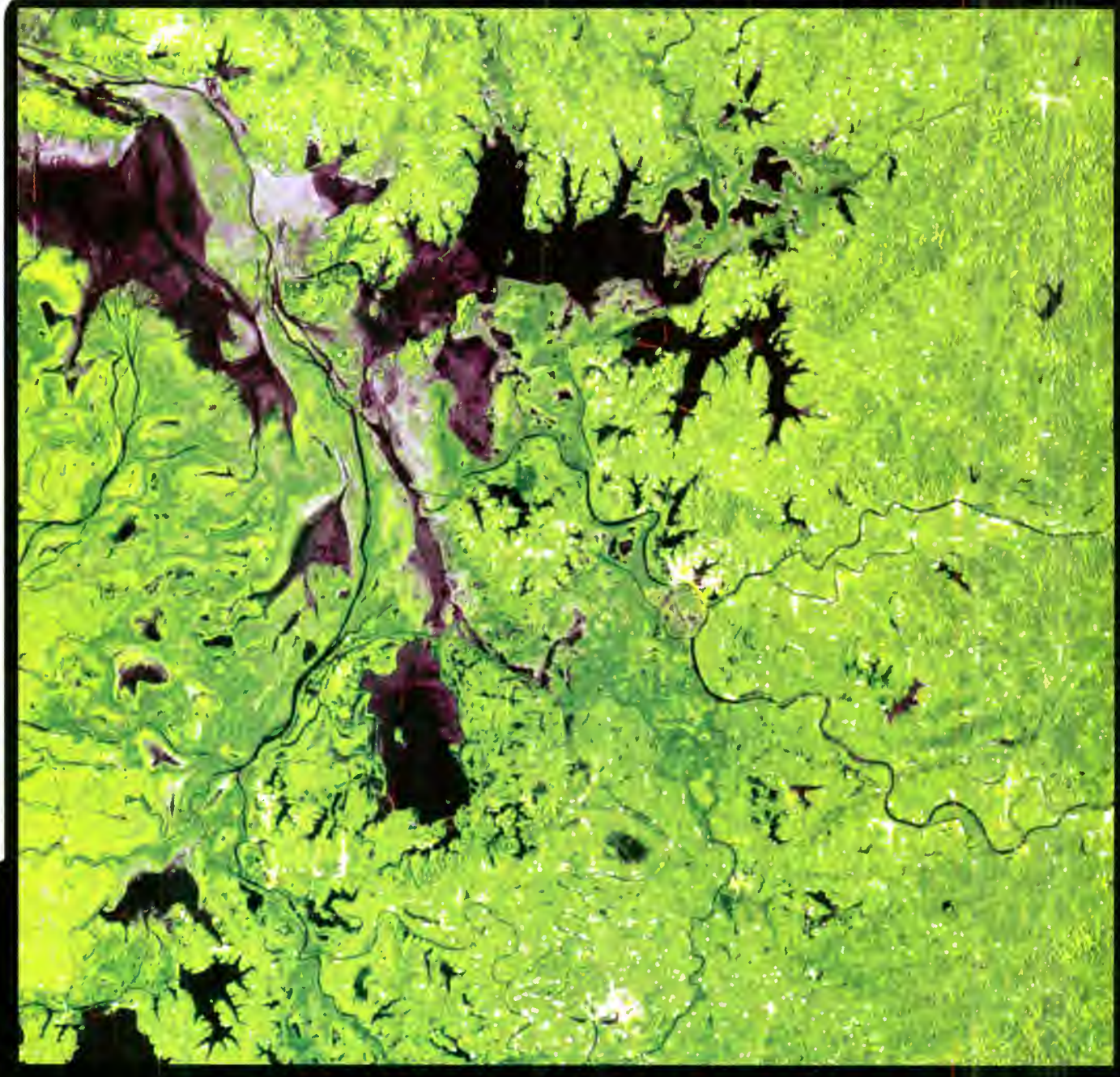
Seasonal Changes in Lake Poyang's Water Levels



ENVISAT asar - 29/01/05 & 21/08/05 + ra-2 2002-2006

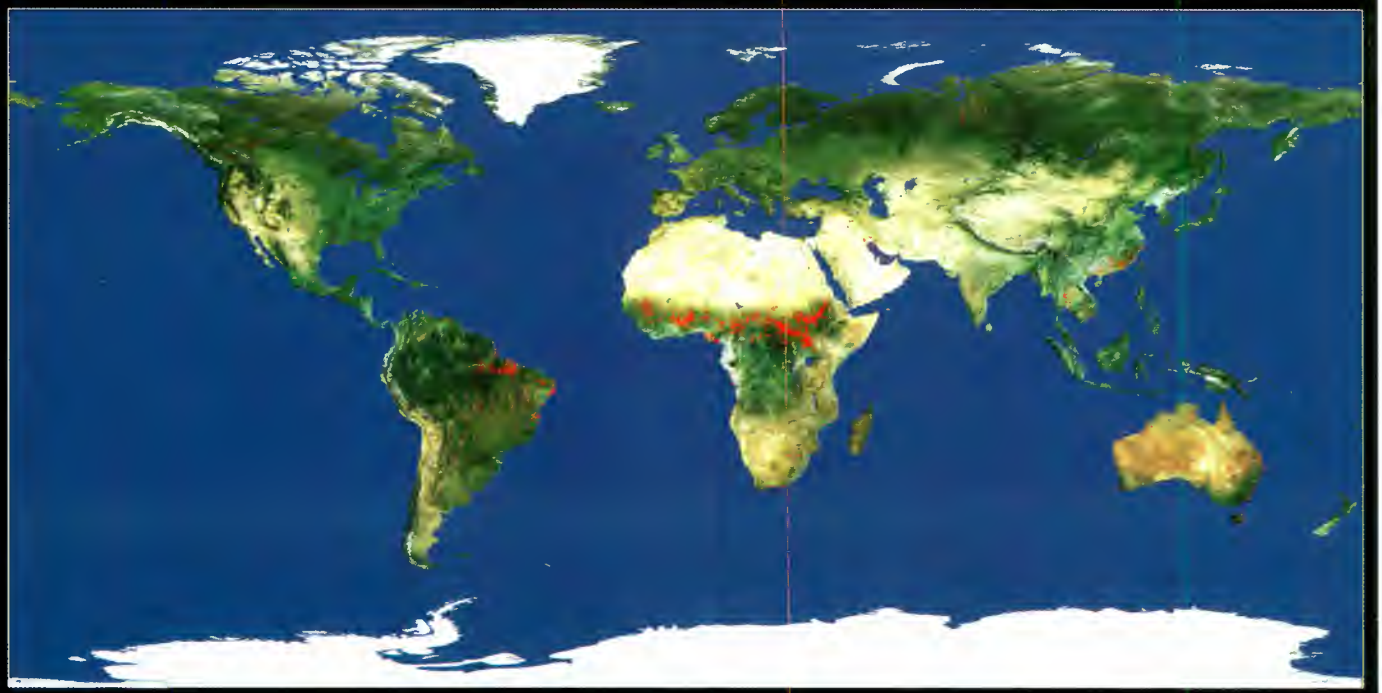
Credits: ESA - SERTIT & EAPRS, De Montfort University

Poyang Lake (Poyang Hu) in China



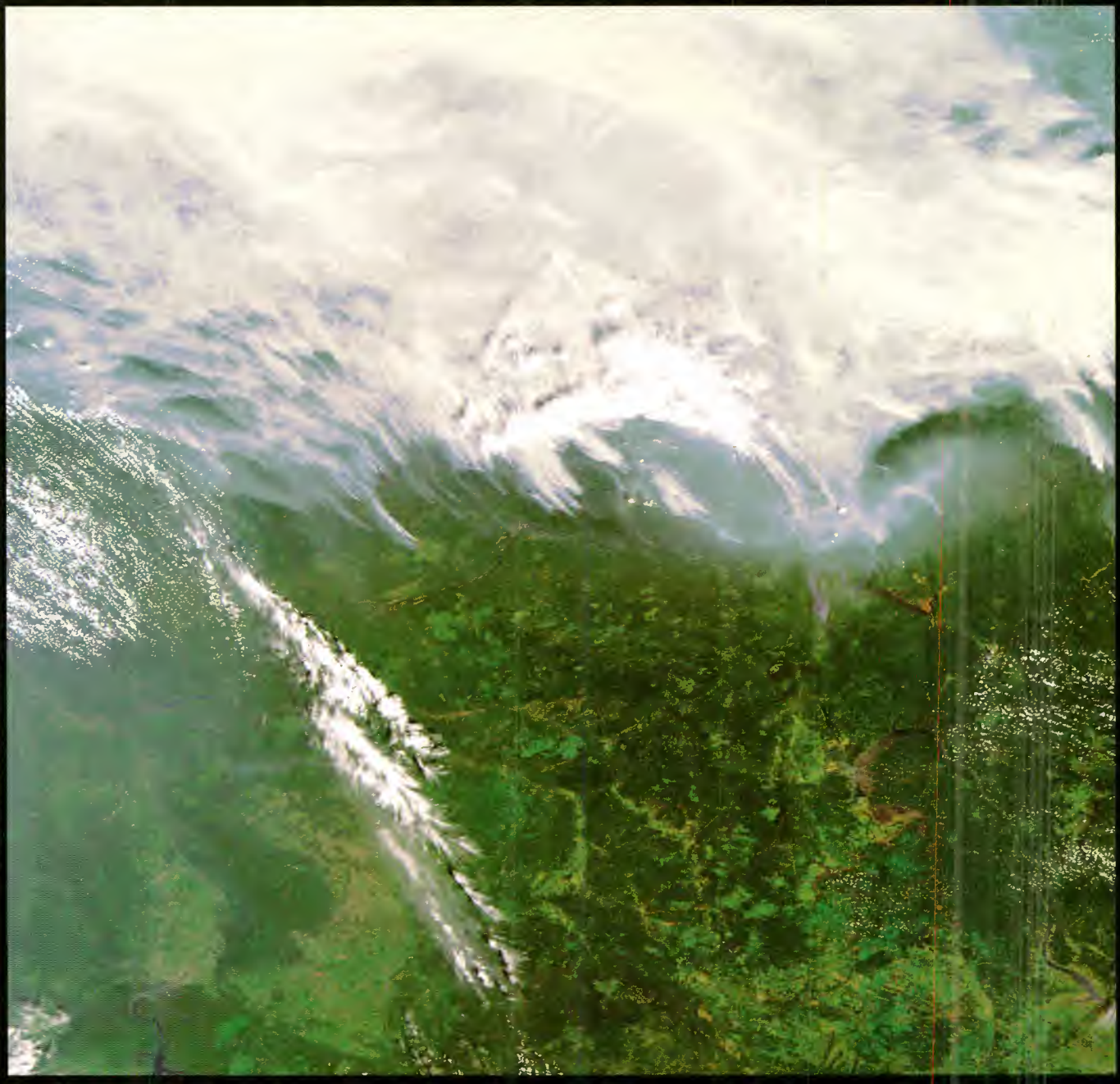
ENVISAT asar - 29 December 2005

The World Fire Atlas



ENVISAT aatsr - December 2003

Forest Fires in Siberia



ENVISAT meris - 24 July 2006

OCEAN

Ocean colours effects due to plankton upwelling, Mauritania

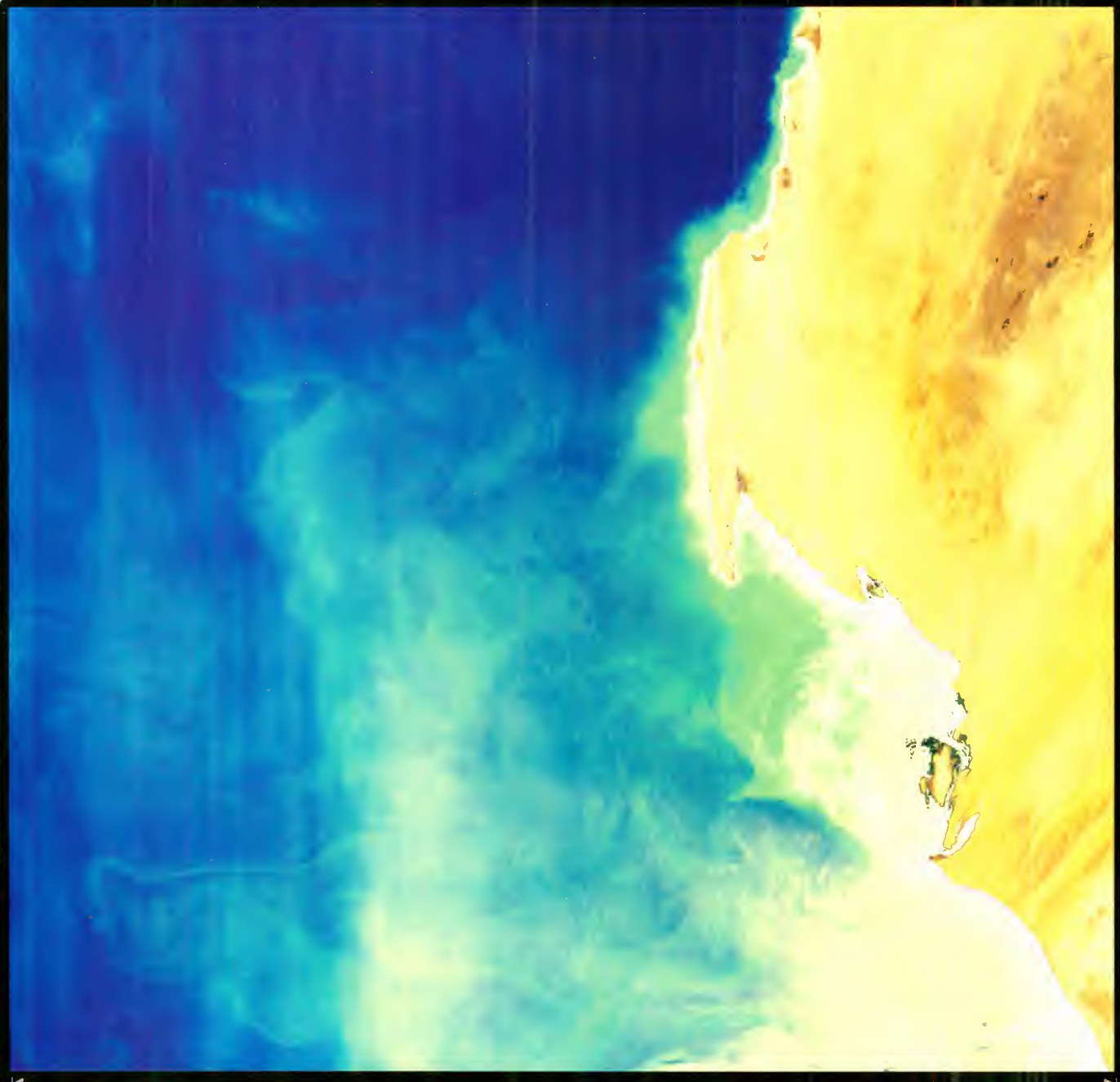
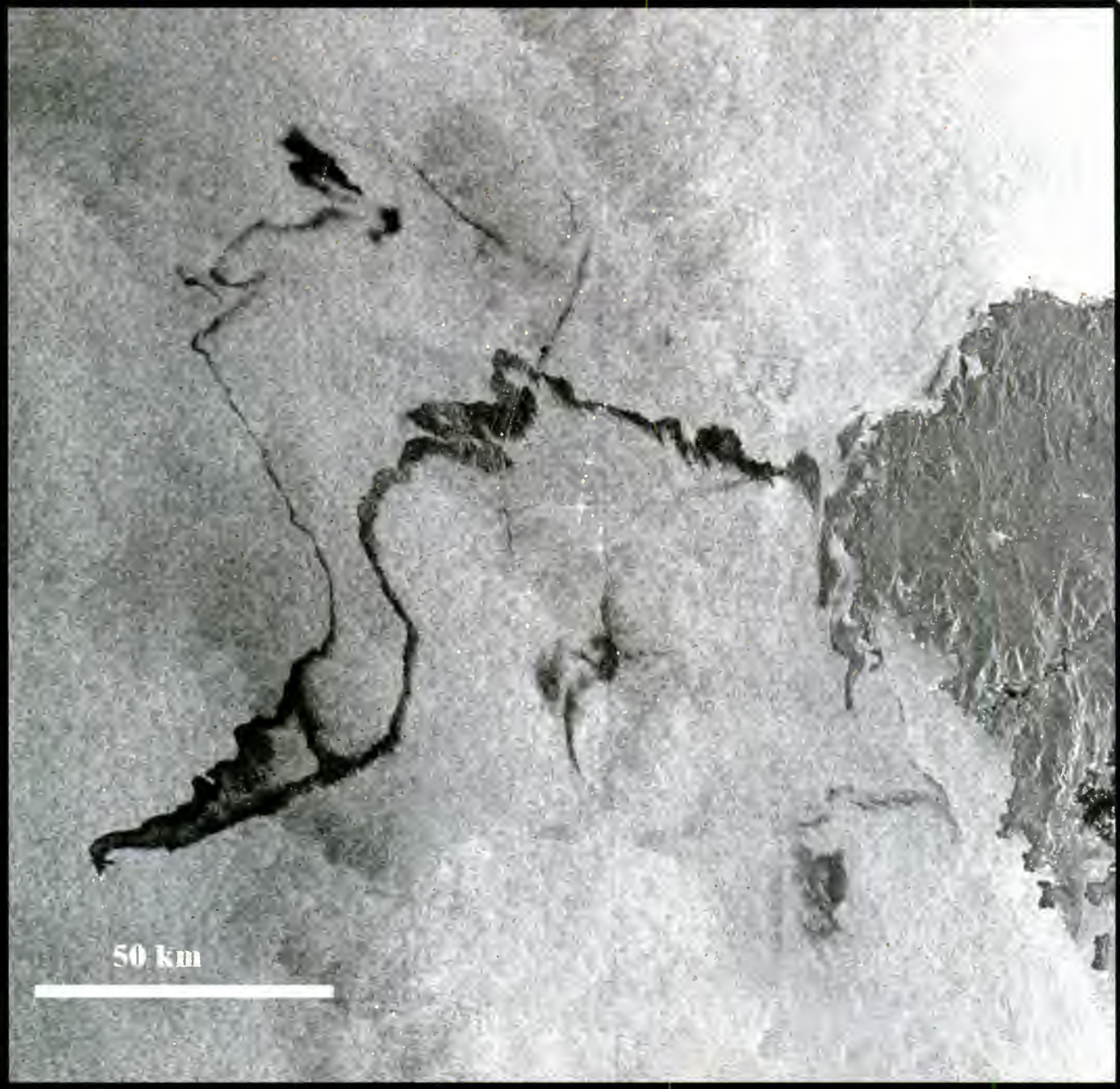


image width: 702 Km

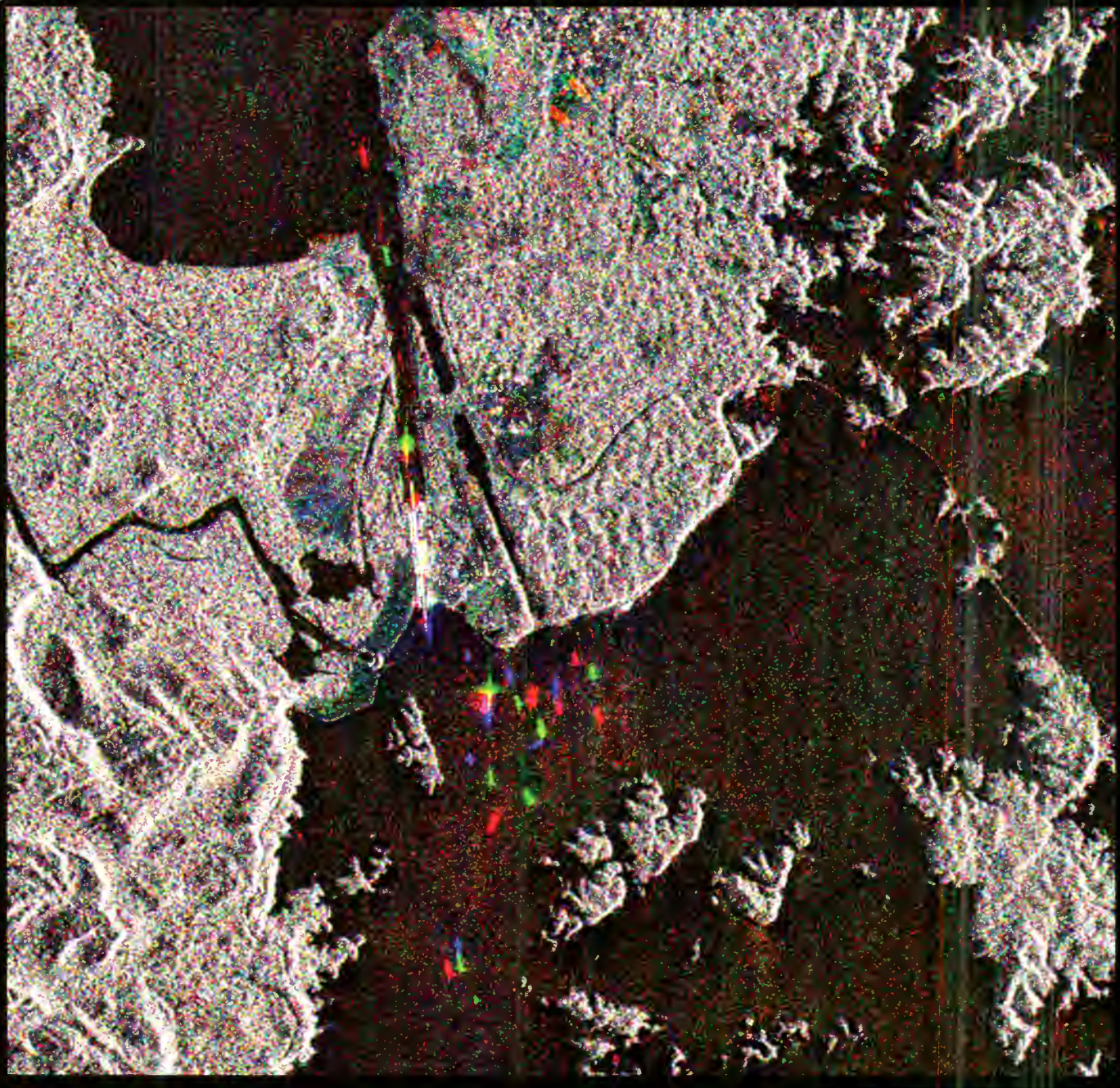
ENVISAT meris - 22 March 2002

Prestige's Oil Slick near the Coasts of Galicia, Spain



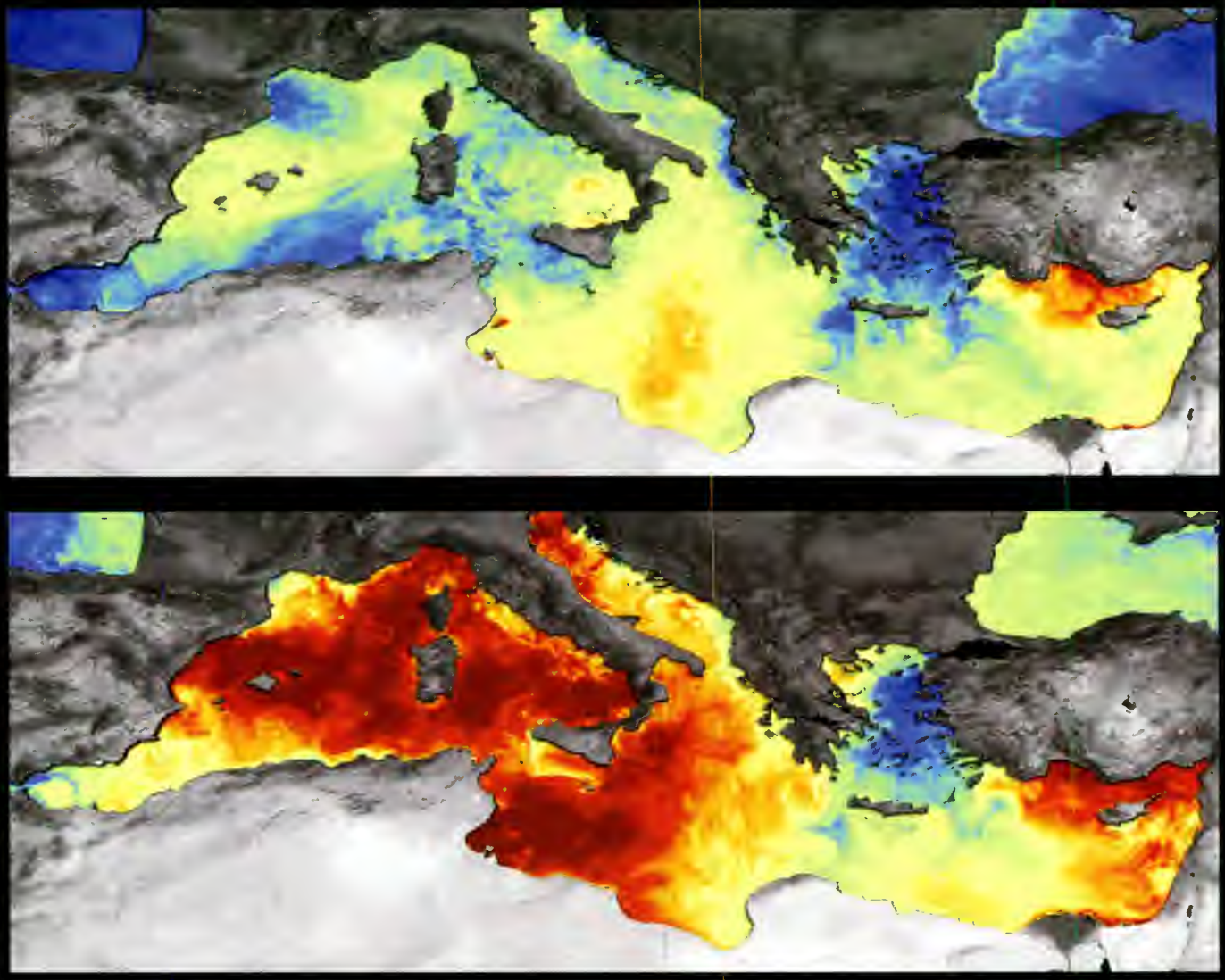
ENVISAT asar - 17 November 2002

Ship Movements, the Panama Canal



ENVISAT asar - R: 16/03/04, G: 12/01/04, B: 14/10/04

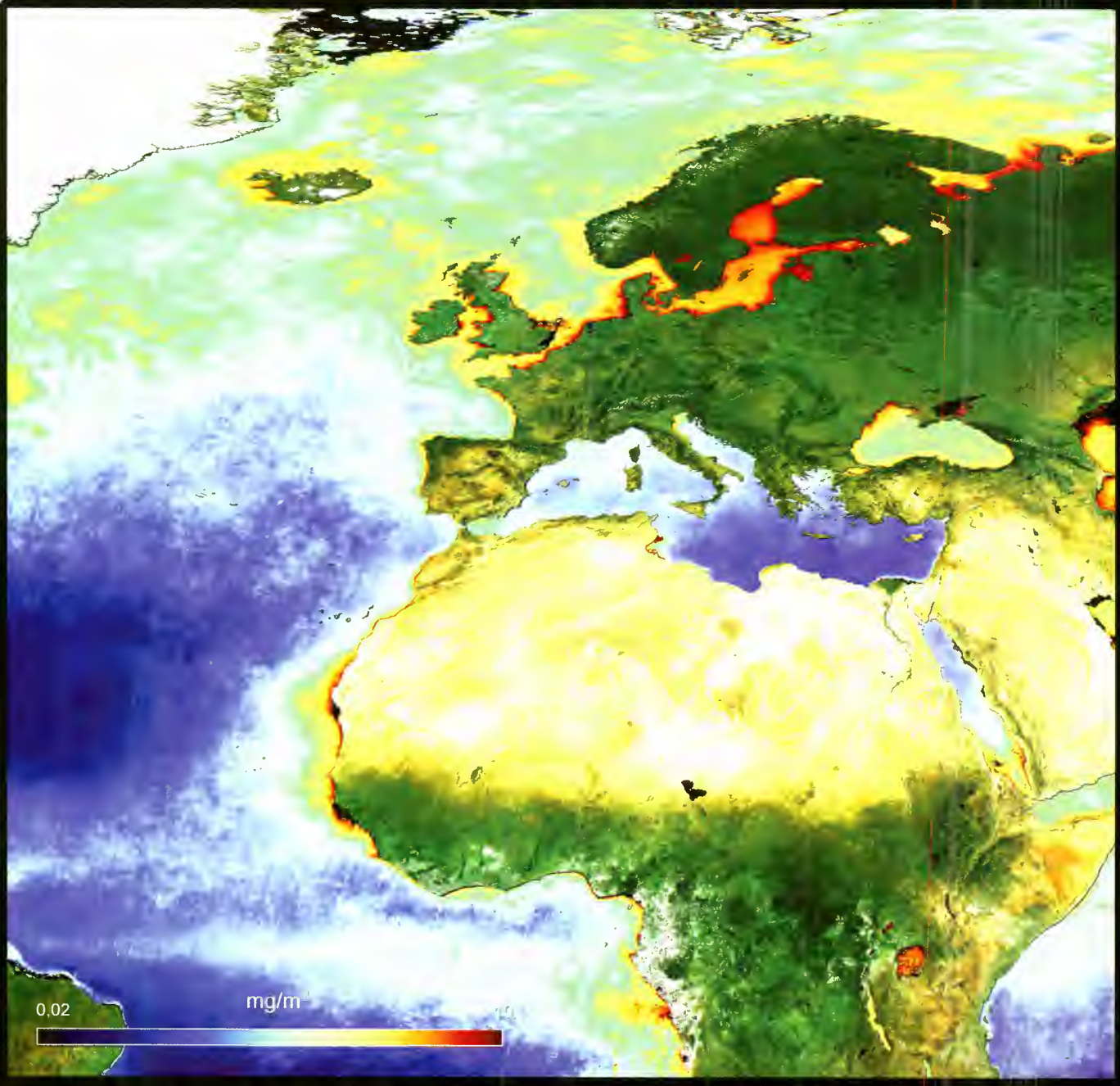
Mediterranean Sea Surface Temperatures Increase



Credits: Medspiration

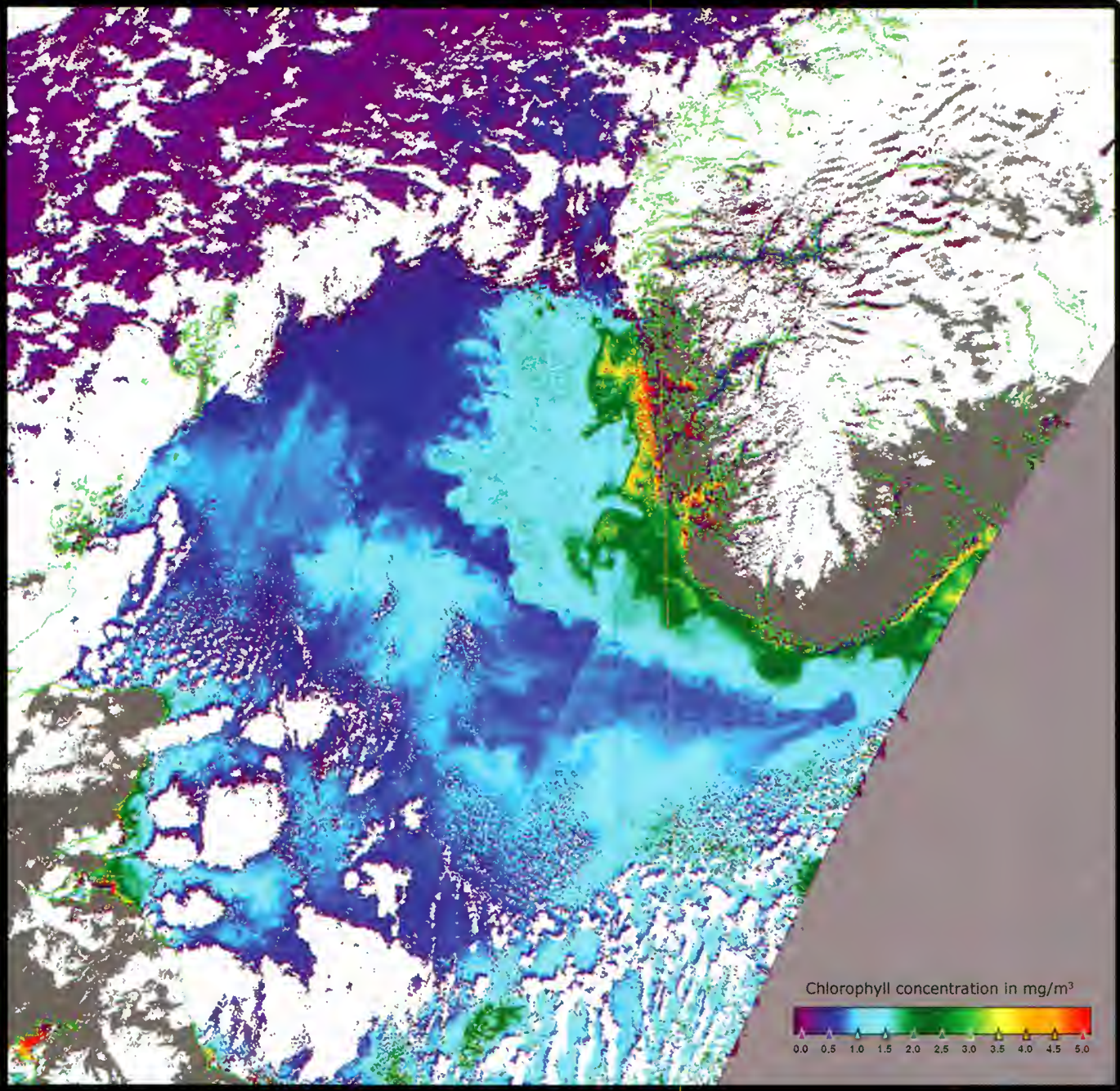
ENVISAT aatsr (among other data) - 7-26 July 2006

Chlorophyll-a Concentration



ENVISAT meris - 2005

Algal product, North Sea between Norway and the UK



Credits: NERSC - ESA

ENVISAT meris - 27 February 2005

Plankton Bloom close to Iceland and in the Denmark Strait

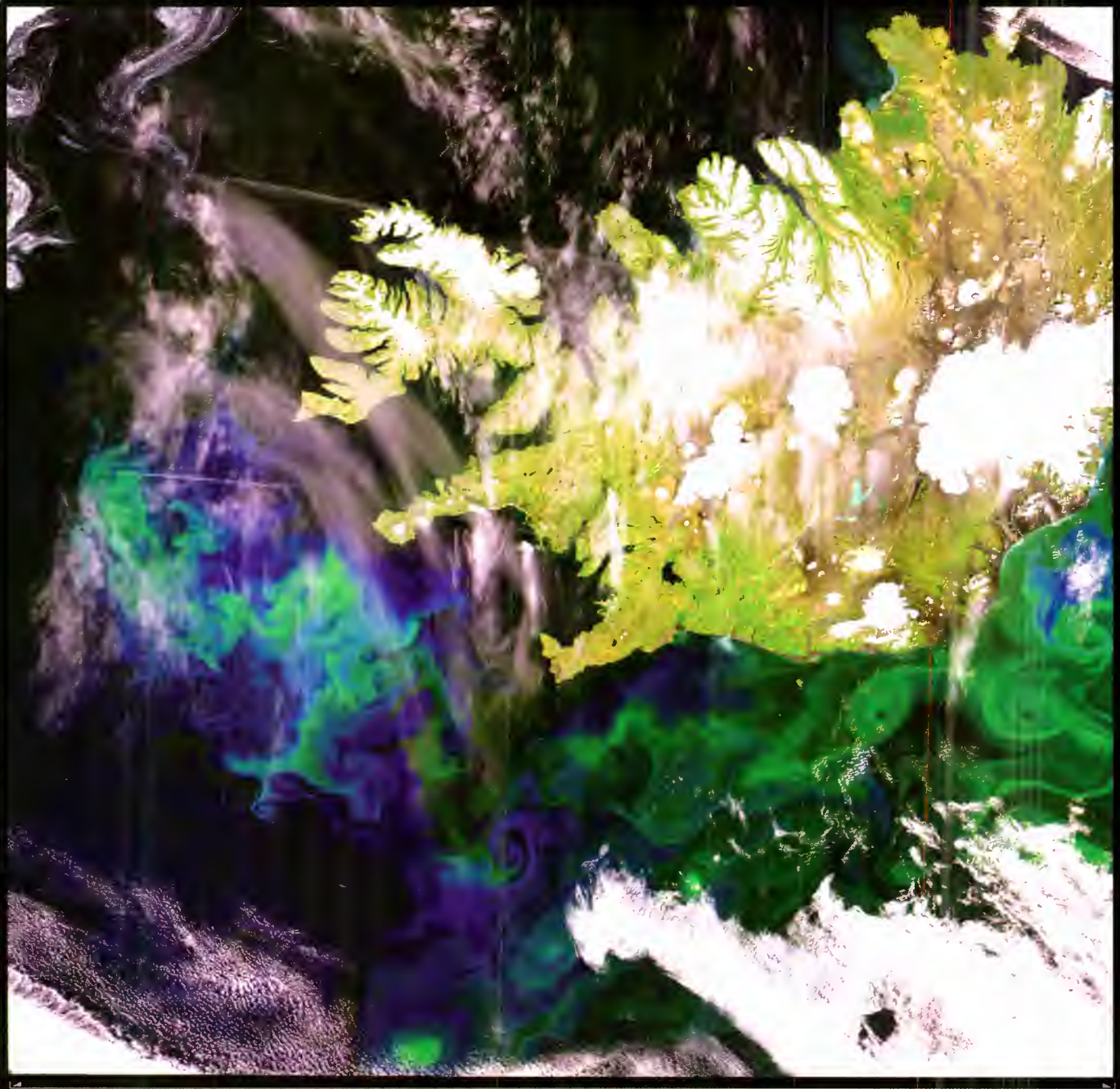
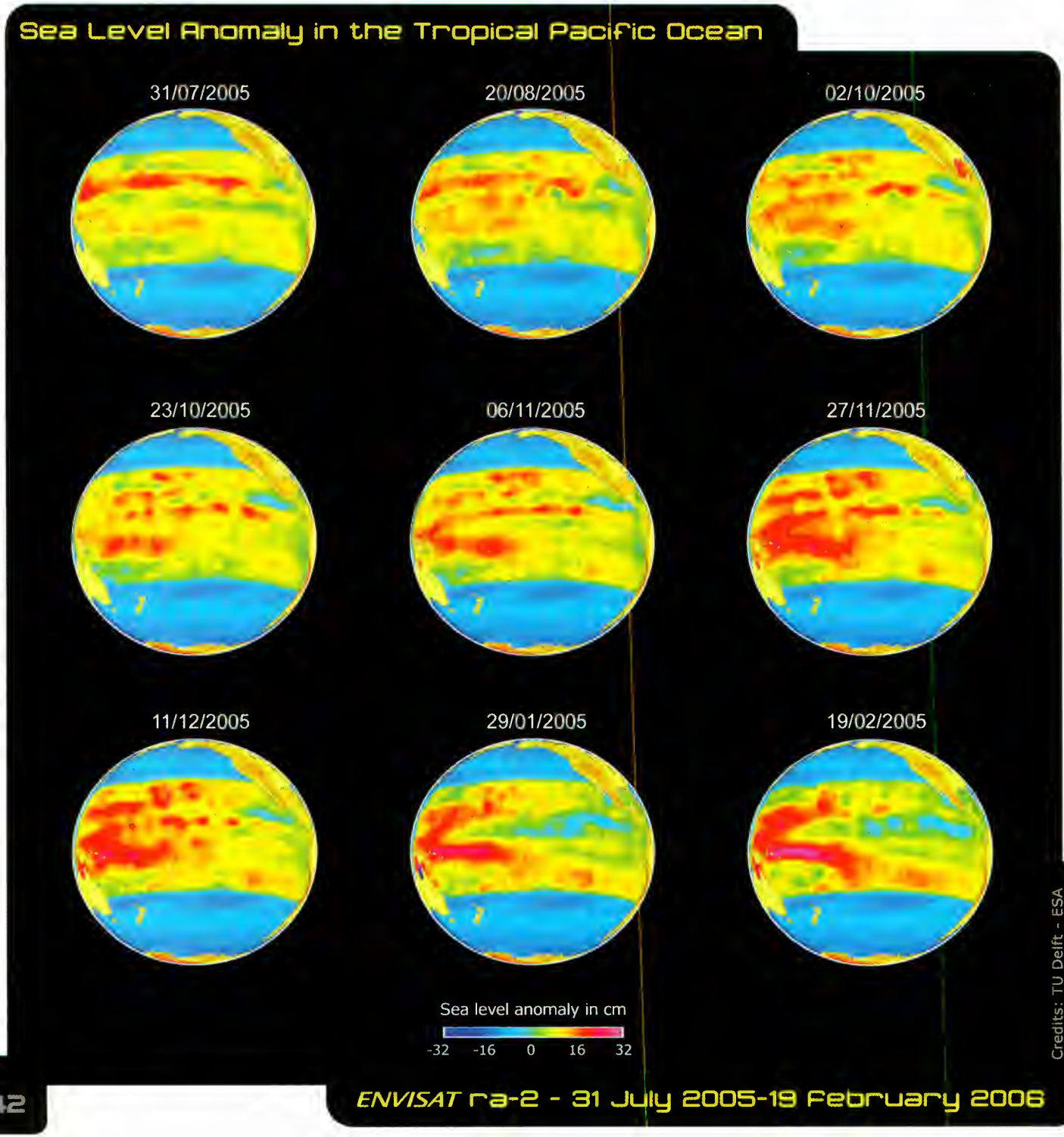
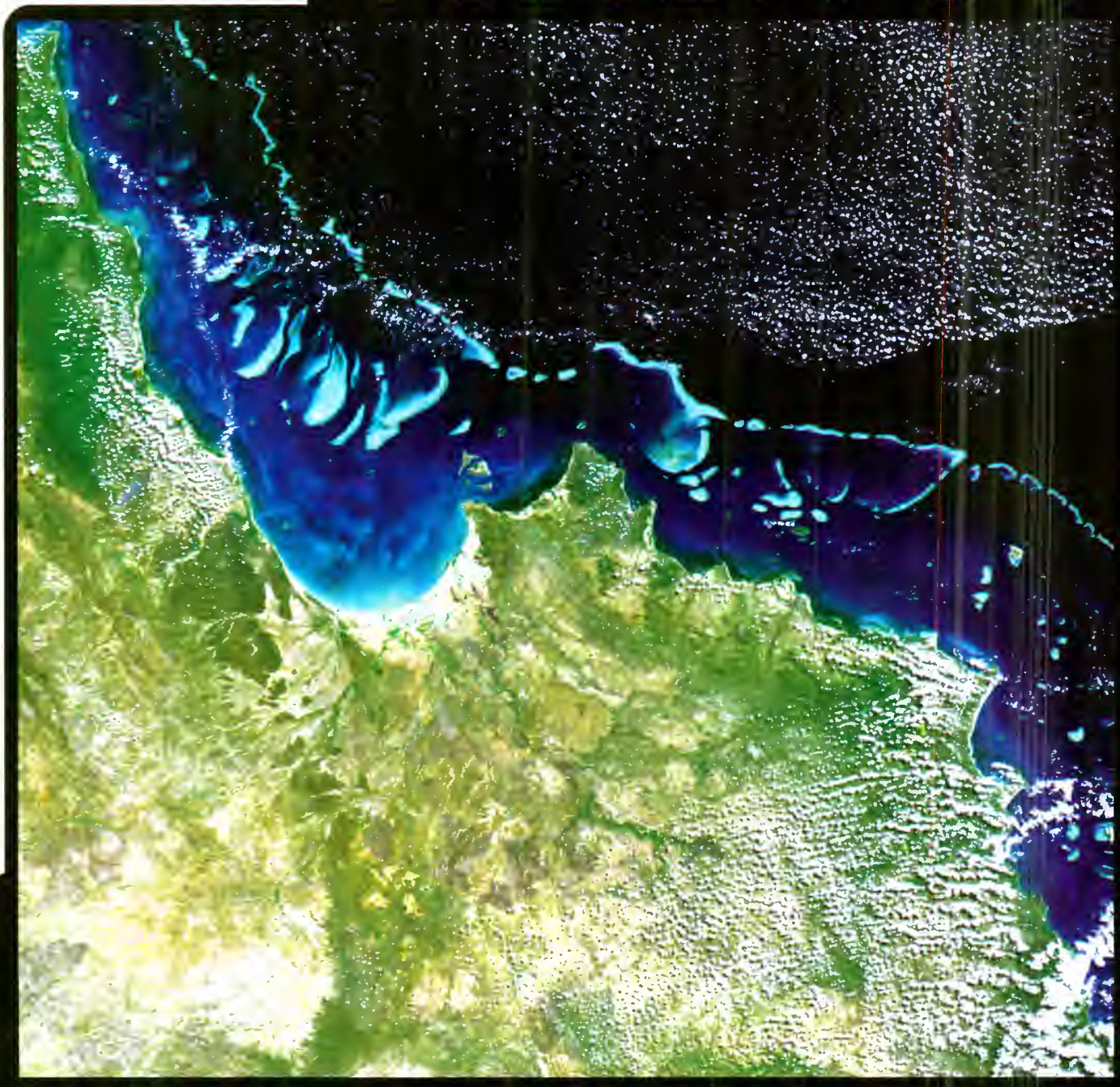


image width: 672 Km

ENVISAT meris - 21 June 2004

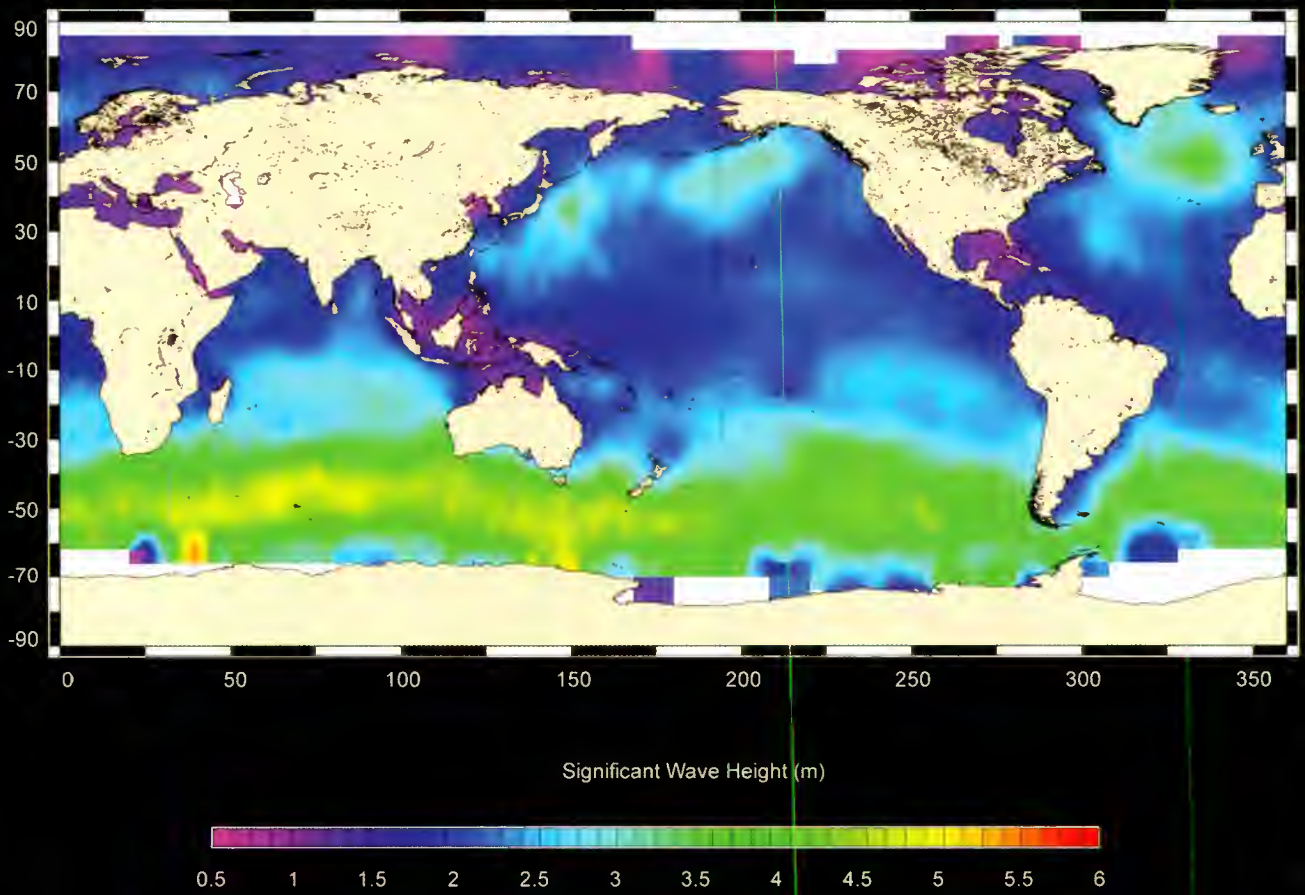

Sea Level Anomaly in the Tropical Pacific Ocean
31/07/2005
20/08/2005
02/10/2005
23/10/2005
06/11/2005
27/11/2005
11/12/2005
29/01/2005
19/02/2005
Sea level anomaly in cm
-32 -16 0 16 32
ENVISAT ra-2 - 31 July 2005-19 February 2006
Credits: TU Delft - ESA

The Great Barrier Reef off Australia's Coast



ENVISAT meris - 19 August 2004

Global Wave Height



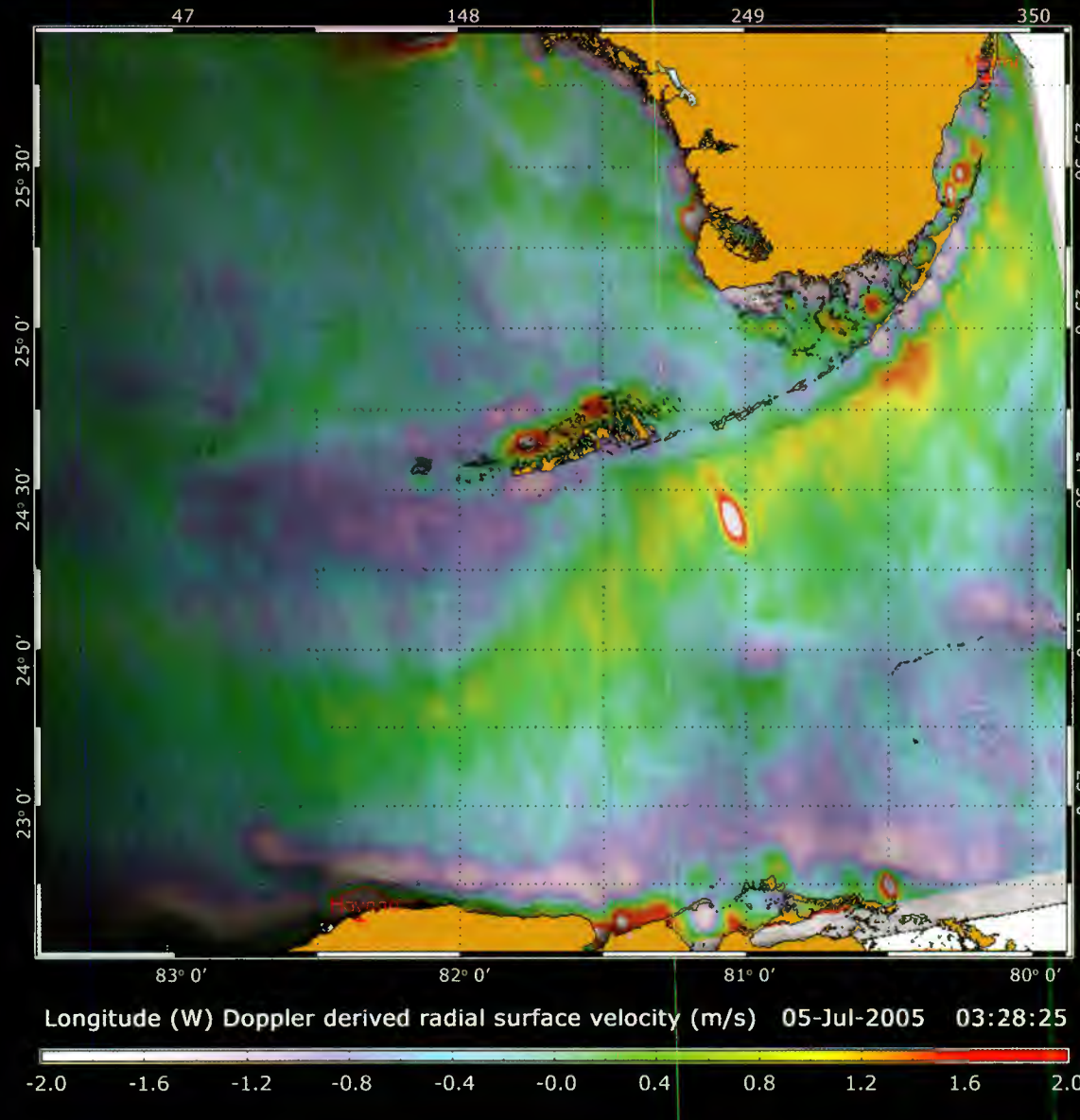
Credits: CNES - CLS

ENVISAT ra-2 - 4 September-10 October 2006

Internal Waves in the Andaman Sea

ENVISAT asar - 28 December 2004

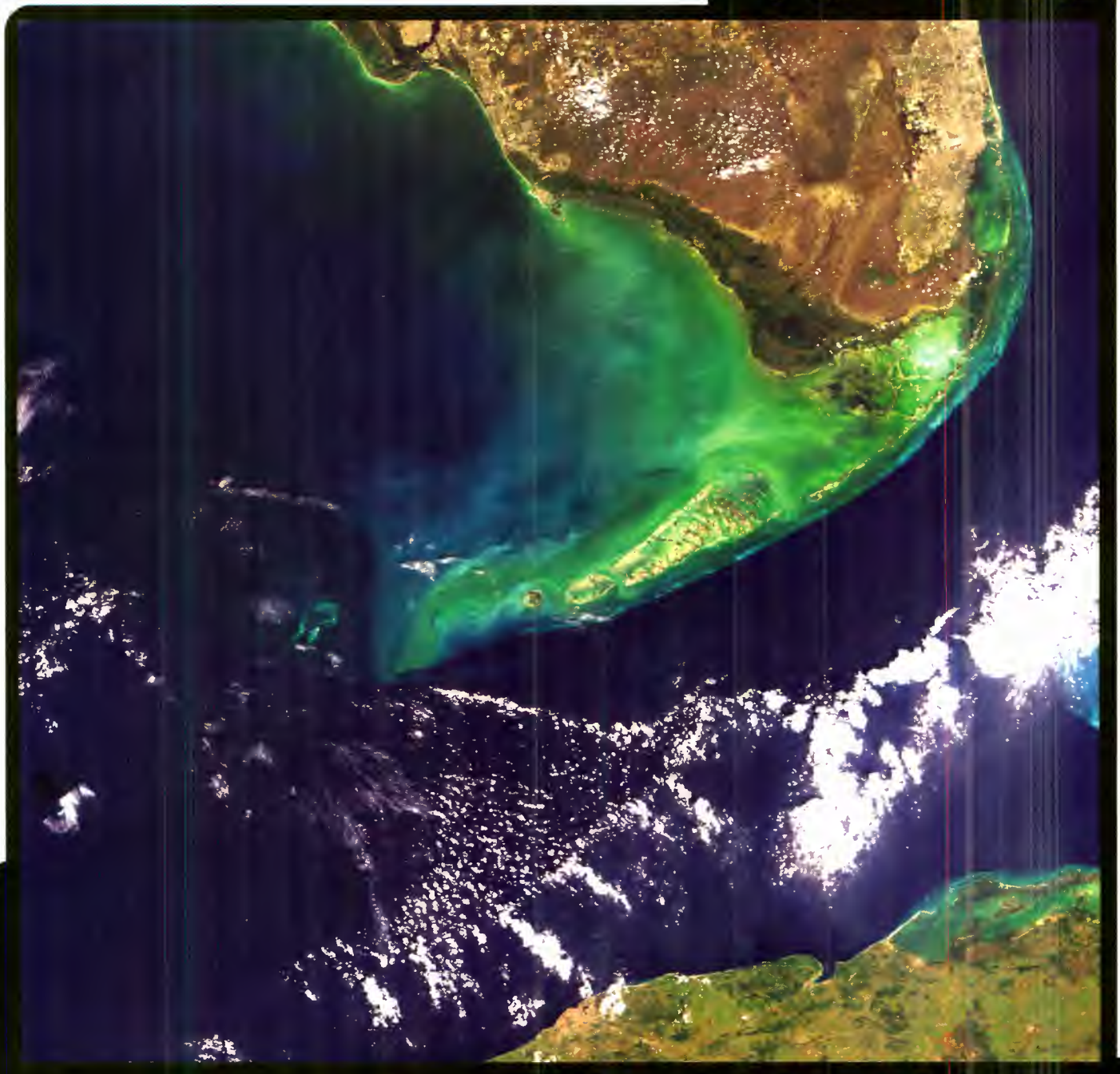
Radial Surface Velocity, Florida Strait



ENVISAT asar - 5 July 2005

Credits: BOOST Technologies

Florida, United States



ENVISAT meris - 10 January 2003

The Yangtze River Mouth

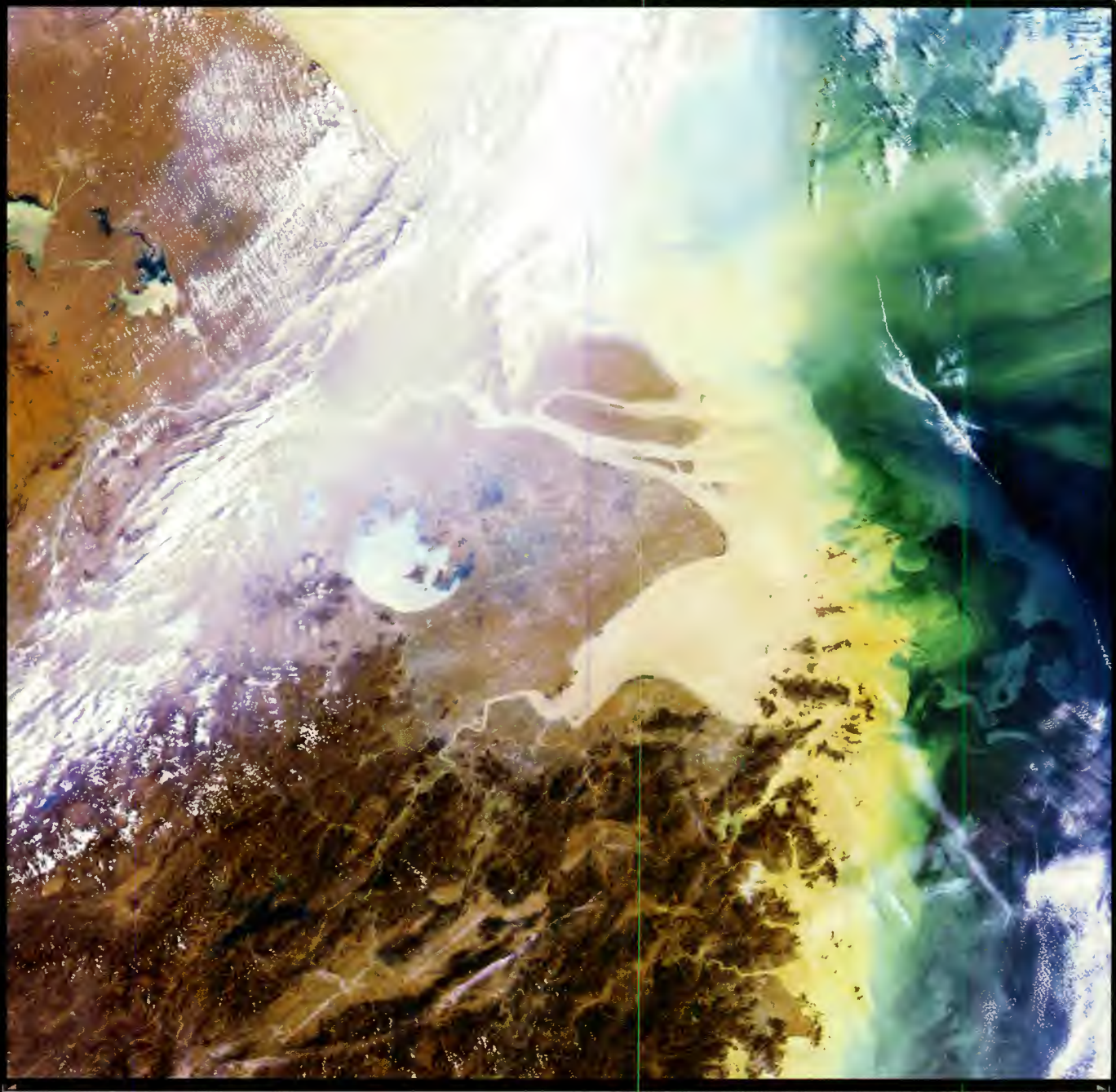
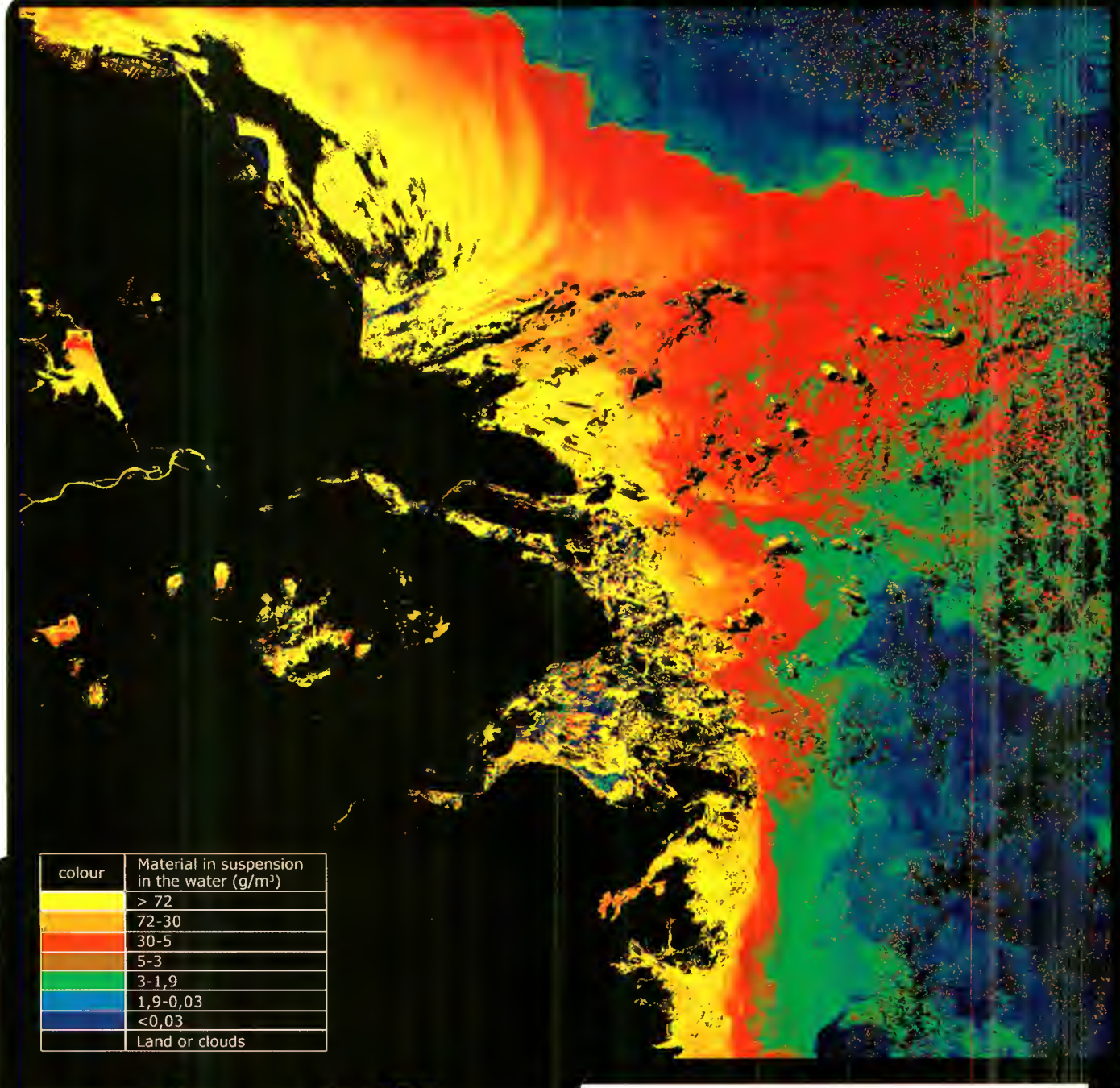


image width: 657 Km

ENVISAT meris - 21 March 2003

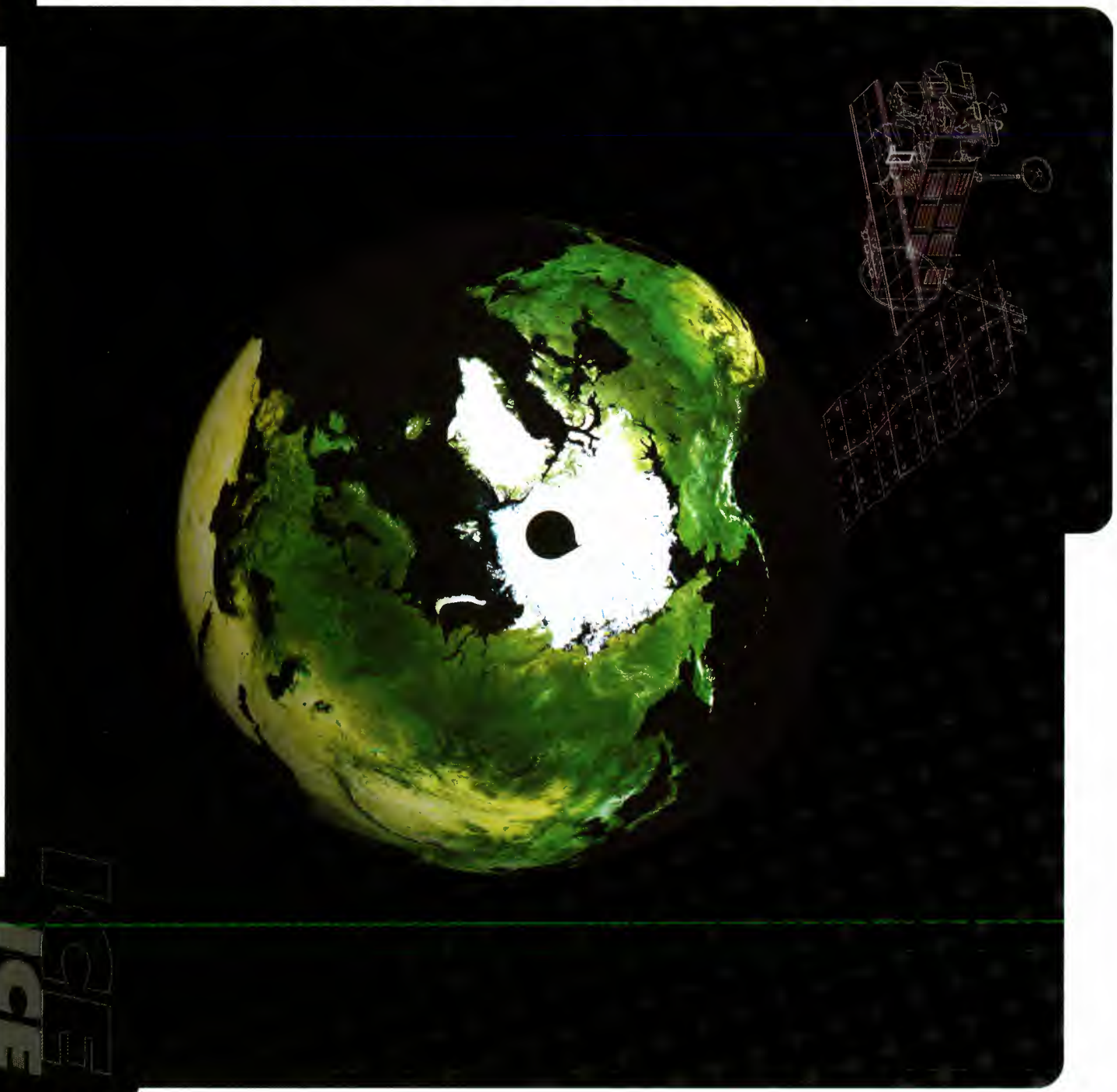
Material in Suspension in the Yangtze River Mouth



colour	Material in suspension in the water (g/m³)
	> 72
	72-30
	30-5
	5-3
	3-1,9
	1,9-0,03
	<0,03
	Land or clouds

ENVISAT meris - 24 October 2003

5 years of ENVISAT - an Overview



Antarctic Continent Mosaic

ENVISAT asar - August 2004

The Antarctic Peninsula

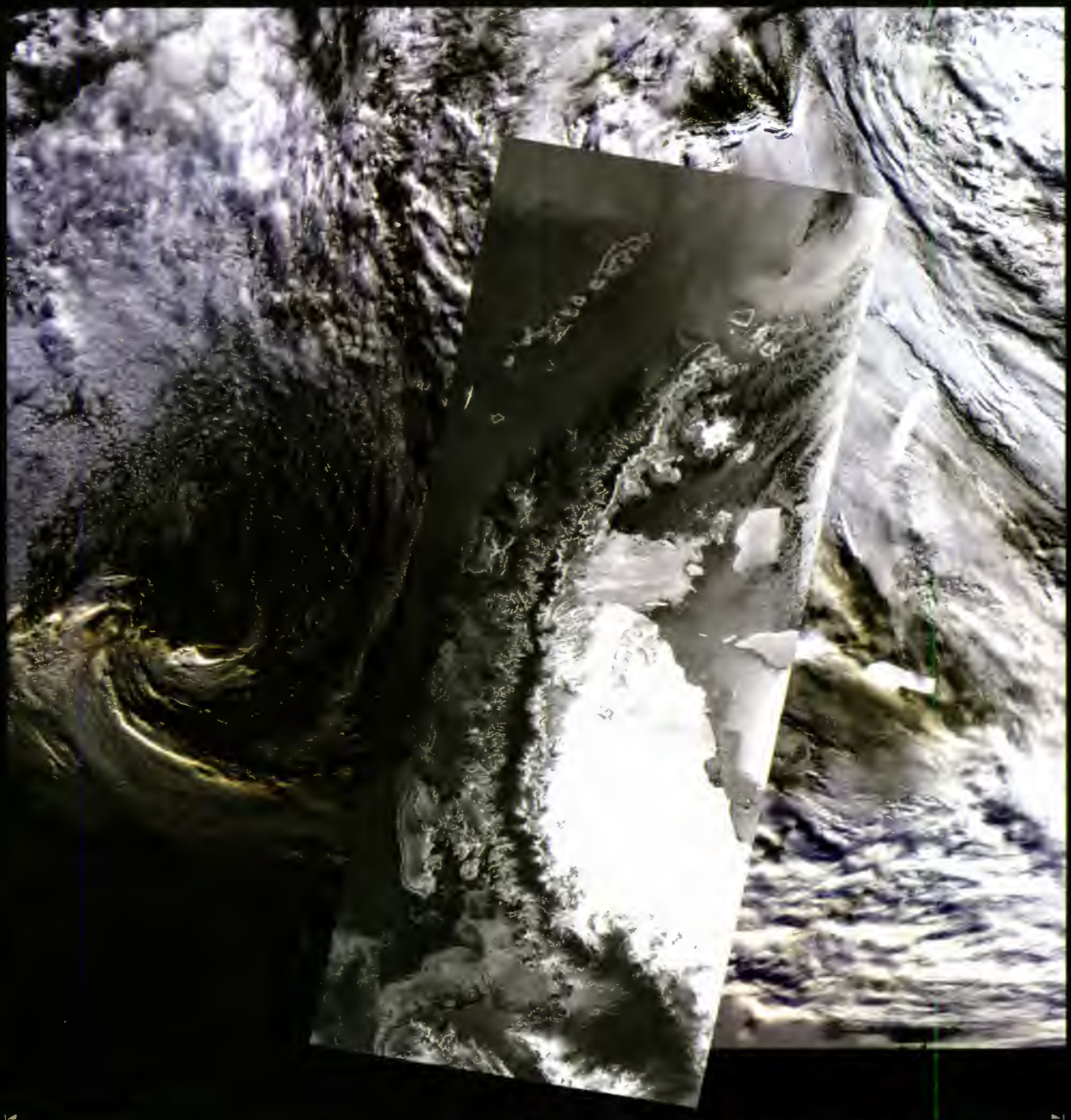
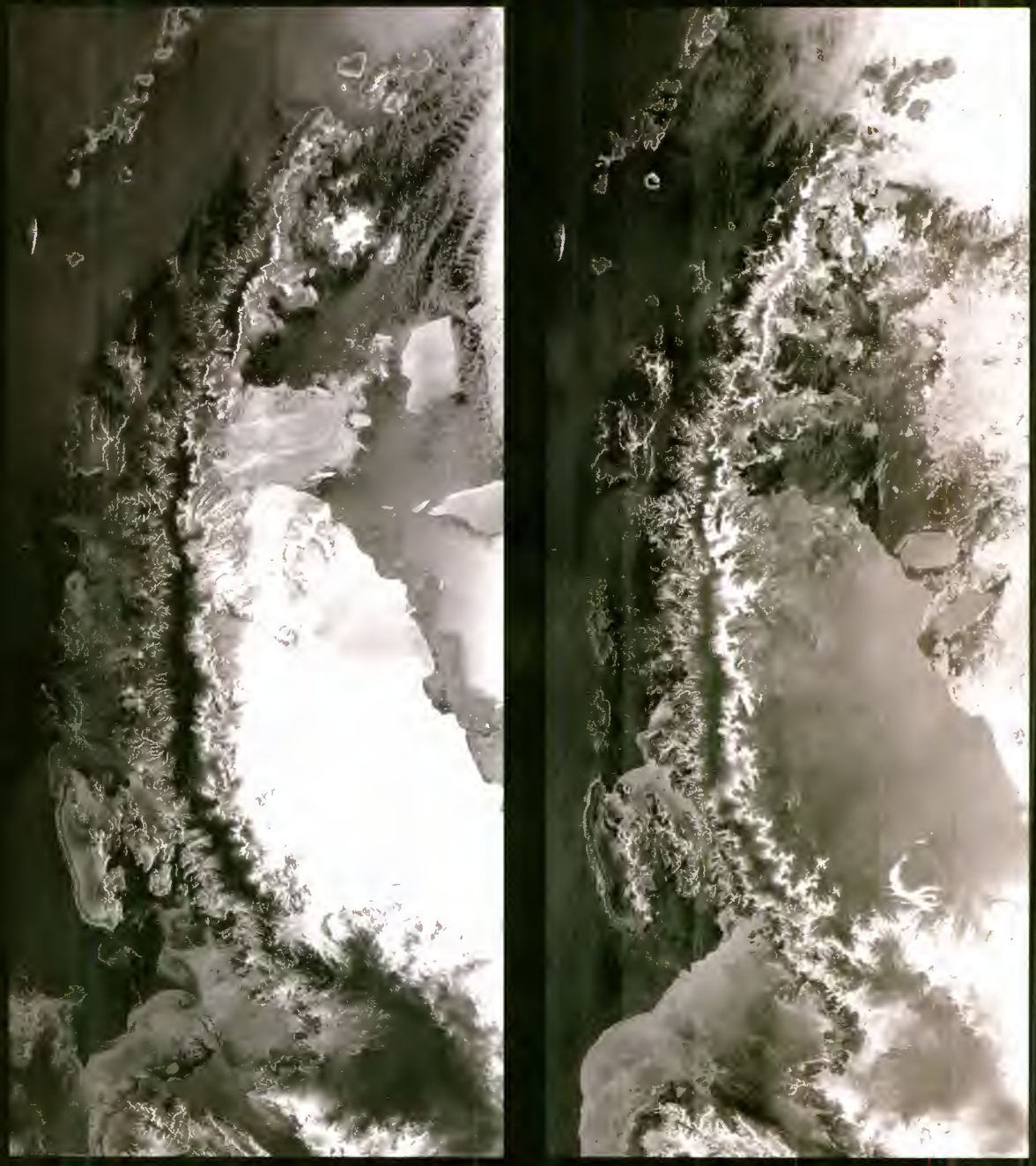


Image width: 330 Km

ENVISAT meris - 23 March 2002 & asar - 18 March 2002

The Collapse of Larsen B Ice Shelf, Antarctic Peninsula



ENVISAT ASAR - 18 March 2002 - 11 February 2006

Collision between the B-15A Iceberg & the Drygalski Ice Tongue

ENVISAT asar - 15 April 2005

The Beaufort Sea, Canada

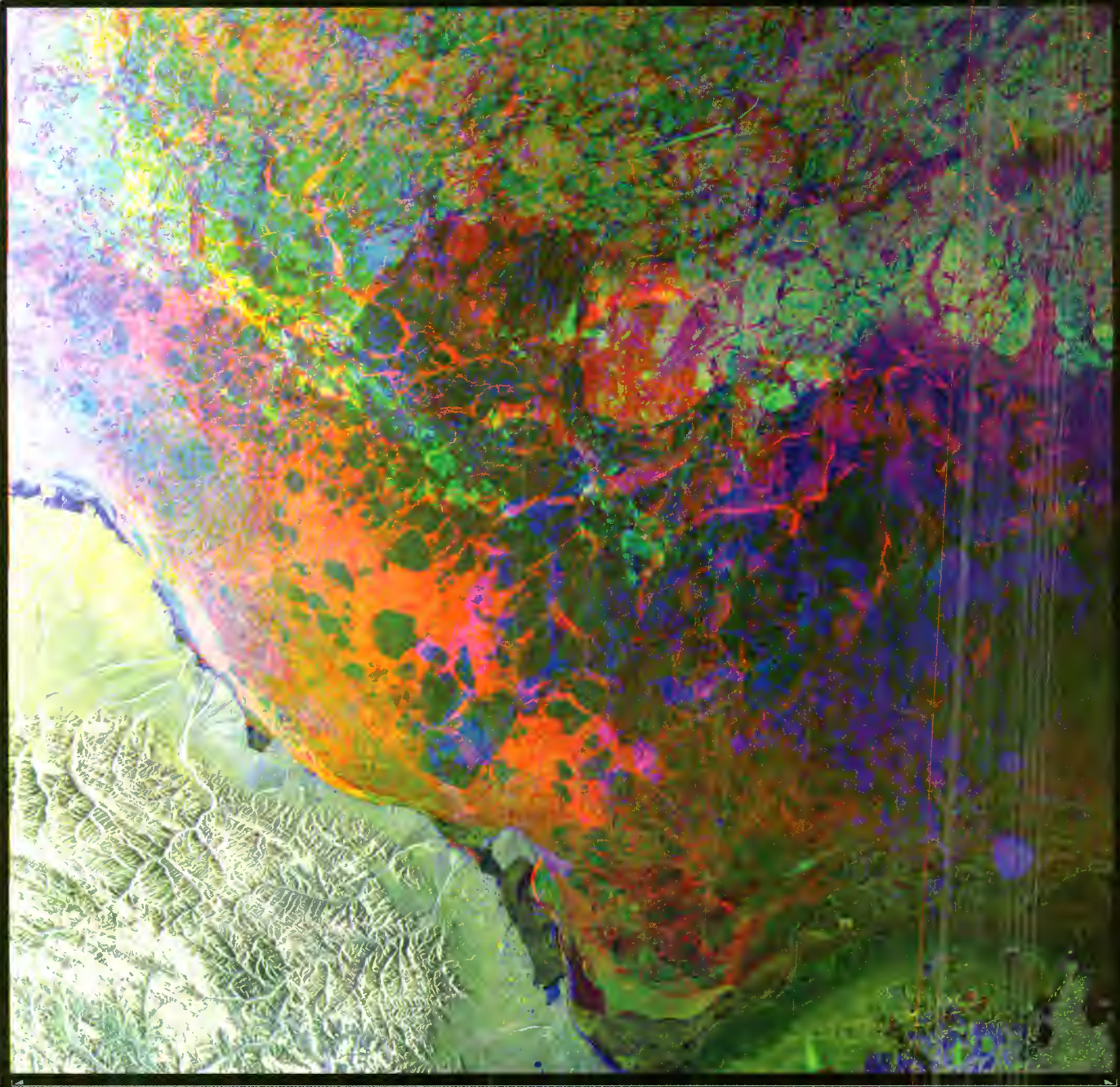


image width: 351 Km

ENVISAT asar - R: 23/09/03, G: 16/03/04, B: 04/01/04

Svalbard, Norway

image width: 412 Km

ENVISAT asar - 29 December 2003

Sea North of Svalbard, Norway

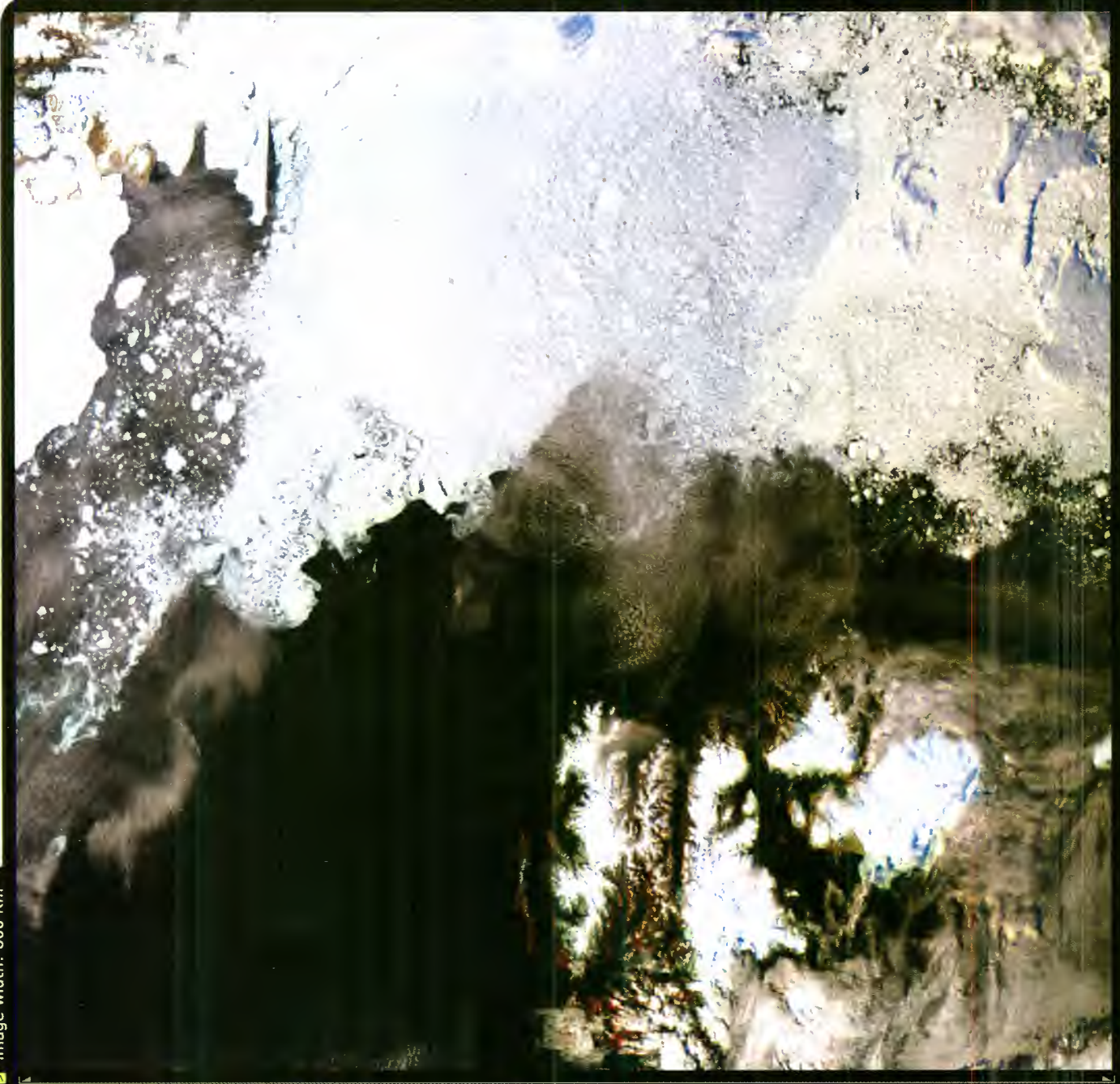
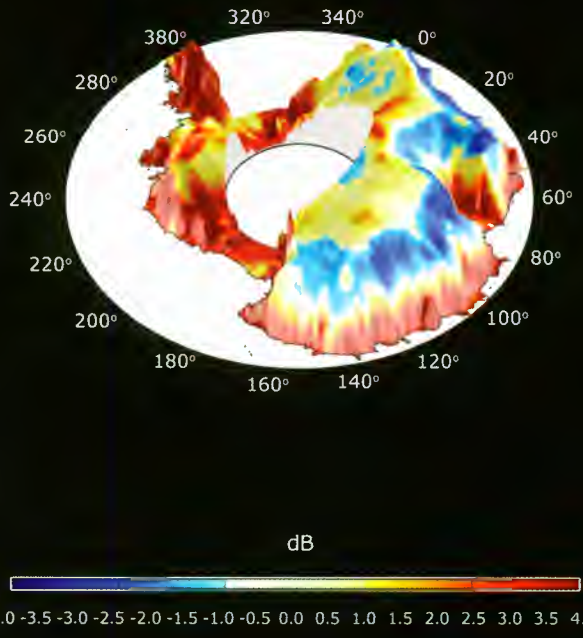
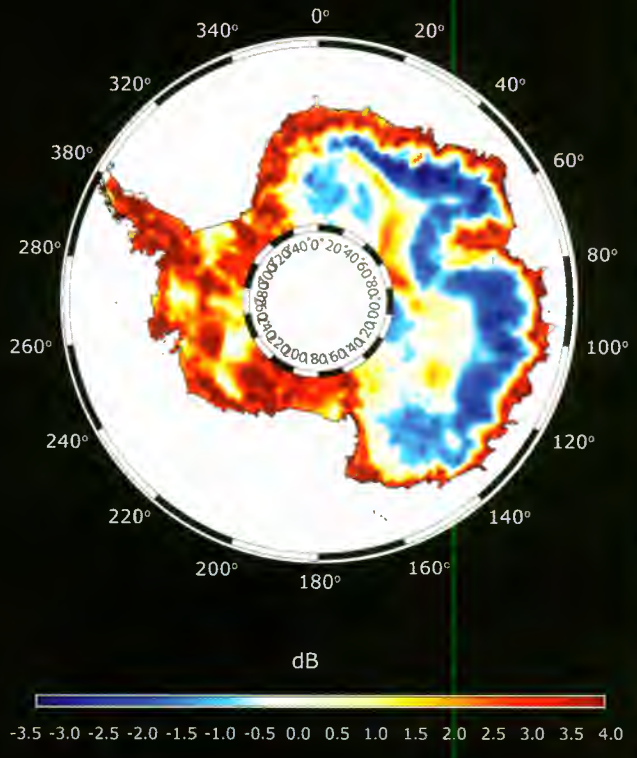


image width: 800 Km

ENVISAT meris - 29 August 2006

Ice and Snow Signatures, Antarctica

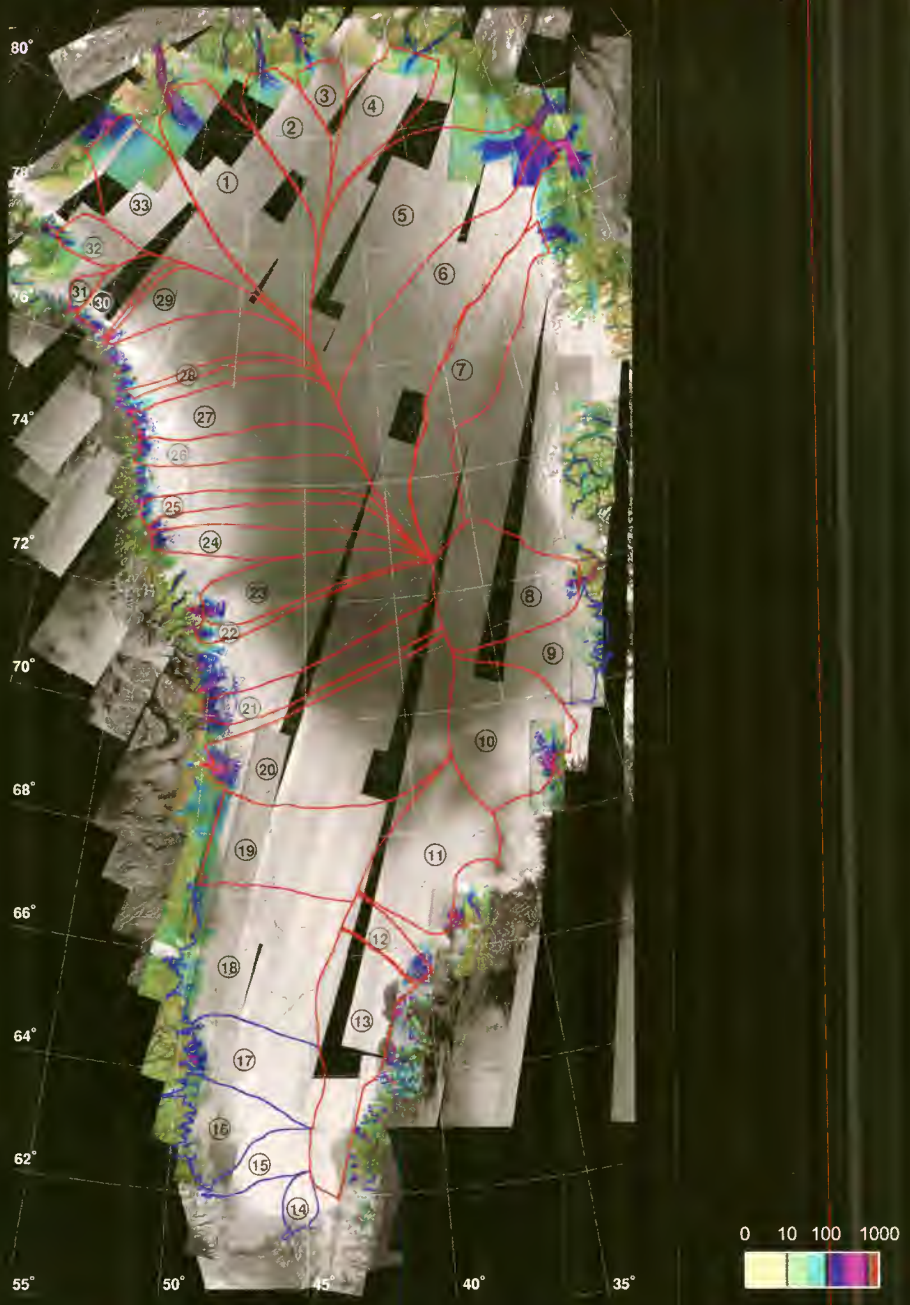




Credits: LEGOS

ENVISAT ra-2 - September 2002-November 2006

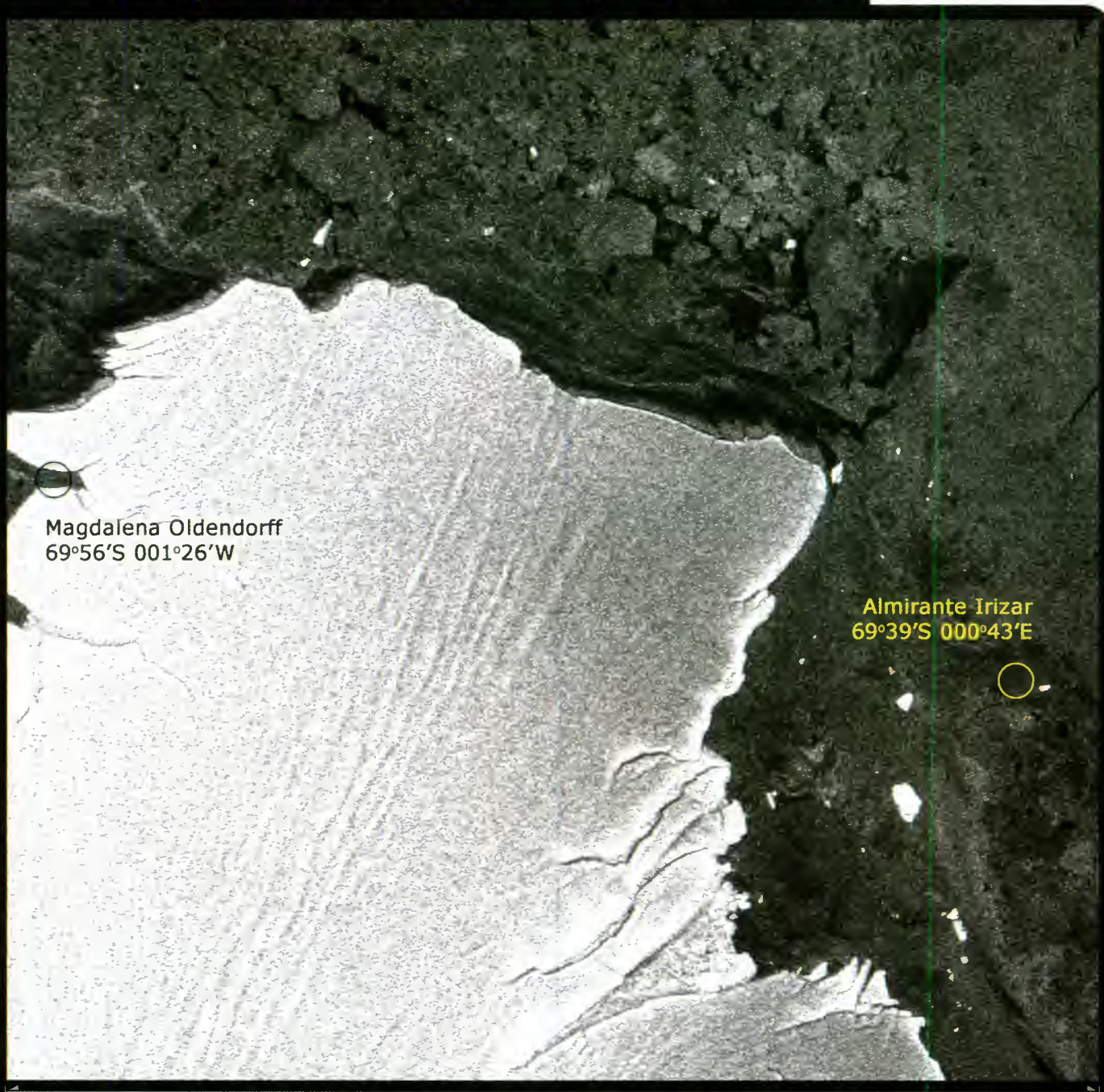
Ice-velocity Mosaic of the Greenland Ice Sheet



Credits: E. Rignot, Science, Feb. 2006

ENVISAT asar + *ERS* & radarsat-1 - 1995-2005

Envisat Helps Icebound Ship Rescue in Antarctica



ENVISAT asar - 31 July 2002

Ship Tracks in the Gulf of Finland

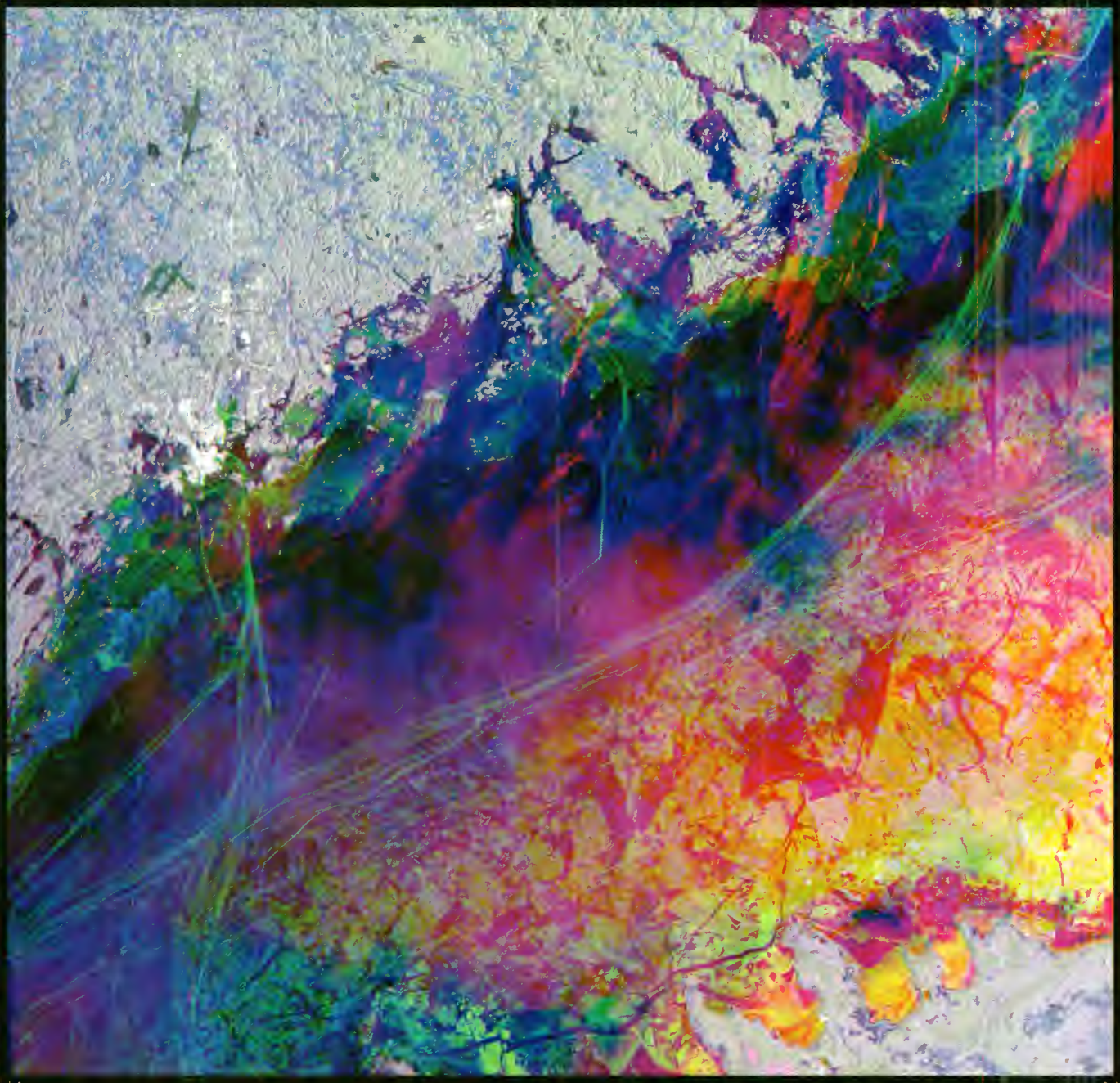


image width: 105 Km

ENVISAT asar - R: 1/07/03, G: 7/01/03, B: 22/04/03

Foxe Basin, Canada

image width: 512 Km

ENVISAT aatsr - 28 January 2004

Summer's Arrival - Lena River Delta, Russia

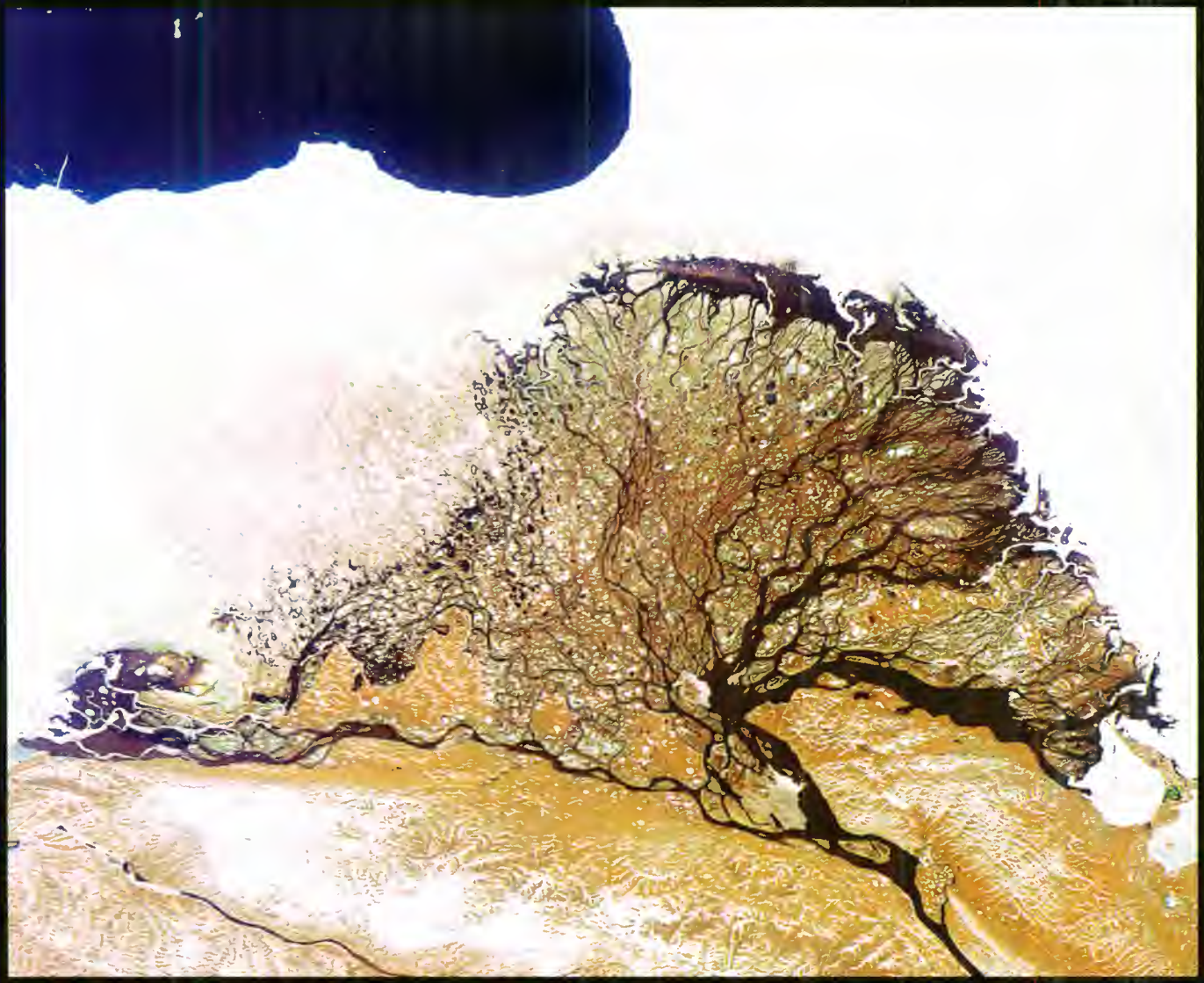


image width: 350 Km

ENVISAT meris - 15 June 2006

From a vantage point high above our planet, satellites are able to provide a truly **global picture** of the **Earth**. This space-borne information can be used to monitor and measure even small changes in our **Land**, **Sea** and **Atmosphere**.

Satellites can provide us with a wealth of information on some of the most remote and inaccessible areas of the Earth, for example **the Antarctic**, where the ability of some instruments to work independently of cloud-cover and poor light conditions has distinct advantages.

In the short term, data gathered in near-real time can provide the timely and precise information needed to effectively pinpoint and manage many natural disasters, for example tracking the path of a **hurricane**, the damage extent of an **earthquake**, or the "hot spots" of a **forest fire**.

In the long term, continuous and objective satellite monitoring helps identify and assess environmental trends evolving over longer time periods, for example changes in our **ozone layer**, a rise in our **sea levels** or any gradual ground **subsidence** in our cities.

Satellite data can provide independent, operational and relevant information to support a range of policies serving sustainable development, thus making a valuable contribution to our quality of life by ensuring a better **understanding** for the **security** and **benefit** of our planet.

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